

AROUND THE WORLD IN 50 DAYS

"Inside Dope"

by GEORGE F.
TAUBENECK



The 'New' Hawaii
Further Industrial Growth
It's a Youthful Land
World War III?
The Future 49th State
They're Happy

The 'New' Hawaii

First firm opinion gathered on this "Around the World In 50 Days" reporting trip:

No matter what any politician tells you, the U. S. Territory of Hawaii deserves to be the 49th State of our Union.

Reason why it hasn't been accepted as such: Hawaii practices interracial and interreligious TOLERANCE to the highest and most admirable degree in the world.

Senator Claghorn doesn't go for this, and tries to maintain the fiction that Hawaii exists only as a tourist trap, and as an exporter of pineapples and sugar.

Realistic modern truth:

Hawaii has become commercially and industrially more vigorous than many of the "backward" states represented by the Senator Claghorns.

American financiers and industrialists, such as Henry J. Kaiser and Clint Murchison, Jr., have moved into Hawaii, and are investing millions of dollars there, for example. Other indicators:

Standard Oil of California is erecting a \$30 million plant to refine oil shipped from Indonesia and Borneo. Large deposits of titanium, one of the new miracle metals, have been located in Hawaii.

Enough bauxite ore to supply the United States with aluminum for 100 years has been prospected in "the Islands," too.

Further Industrial Growth

And in Honolulu, new downtown office buildings are rising more rapidly than anywhere in the continental U. S. A., with the exception of New York City.

Hawaii, you see, is the hub of a rapidly-growing export-import trade with Australia, New Zealand, Indonesia, Hong Kong, Japan, and the entire Orient.

Population is booming—up 26% since 1950, as compared with an increase of 11% on the U. S. mainland during the same period. All this spells commercial and industrial progress.

Newsprint from bagasse (the pulpy residue of sugar cane) is a new Hawaiian business. Likewise there is a growing timber export industry; and commercial utilization of plentiful lava

(Continued on Page 12, Col. 1)

NHAW Told

Furnace Industry May Disappear, Emerge as Year-Round Conditioning

By C. Dale Mericle

ATLANTA—Predicting that the furnace industry may soon disappear as a separate entity to emerge as "home heating and cooling or year-round air conditioning," William T. Reich of the American Institute of Management also warned the National Heating & Airconditioning Wholesalers that they'll "probably lose the unit business" when he addressed the group's closing luncheon session at the 11th annual spring convention here.

Based on the institute's recently issued "industry audit" of the warm air heating industry, Reich's talk aroused considerable opposition among the wholesalers, one of whom charged that the report was biased "by influence of direct selling manufacturers."

Reich denied any bias but (Concluded on Page 37, Col. 1)

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Frigidaire Names F. E. Lehman to New Sales Post

DAYTON—Frederick E. Lehman, formerly direct factory sales manager, has been promoted to a newly-created position of custom products sales manager of Frigidaire Div., General Motors Corp. The appointment becomes effective May 1.

In his new position Lehman (no relation to Herman F. Lehman, general manager of the (Concluded on Page 4, Col. 5)

Unseasonal Warmth Seen In Many Areas Through Mid May

WASHINGTON, D. C.—Temperatures above or "much above" normal in many parts of the country, and near normal in much of the rest of the country, through the middle of May, were predicted by the U.S. Weather Bureau in its most recent 30-day outlook.

Greatest "unseasonal warmth" will be over the Great Lakes Region and Upper Mississippi Valley areas, and along the California Coast, says the (Concluded on Page 37, Col. 5)

In 1957

Ft. Worth Home Cooling Sales Hit 1,437 Believe Drop Due To Curtailed Building

By C. Dale Mericle

FORT WORTH, Texas—Sales of residential air conditioning totaled 1,437 units here in 1957—a drop of 11% from the record high of 1,616 in 1956.

Chief cause of this reduction in sales, contractors believe, was curtailed activity by home builders.

Installations of air conditioning in new homes were off from 1956, it is disclosed in the annual survey made by AIR CONDITIONING & REFRIGERATION NEWS with the cooperation of the Fort Worth Air Conditioning Association and two public utilities: Texas Electric Service Co. and Lone Star Gas Co.

Analysis of residential jobs installed by 57 Fort Worth contractors and six systems installed by homeowners them- (Concluded on Page 35, Col. 1)

Western Show Opens May 7 to 'Fastest Growing Market'

Far West Uses More Products, In 'Different' Ways

LOS ANGELES—The Far West market, comprised of the 11 Western states, may well be the fastest-growing market for air conditioning and refrigeration products.

Bright star in this picture is the market in California, with its fast-growing population and a climate which (between the smog and warmer hot-season temperatures) is making air conditioning a prime consideration.

But there are other parts of

Stories and articles of special interest to Far Western readers include: air pollution—the problem and one solution, pages 16 and 19; air conditioning an existing Los Angeles office building, page 24; how Defense buildup uses air conditioning, page 33; a home conditioned by five heat pumps, one to heat water in a swimming pool; modern methods in in-store preparation of fresh meats, page 26.

the area where air conditioning may have had an even more spectacular growth. Arizona would probably have to credit air conditioning for attracting more permanent residents, and more industry. In Nevada the (Concluded on Page 37, Col. 4)

LOS ANGELES—The doors open at 1 p.m. on Wednesday, May 7, for the Western Air Conditioning, Heating, Ventilating, and Refrigeration Exhibit and Conference at the Shrine Exposition Hall here, with the Show committee promising a "bigger and better exhibit, and a larger and improved conference program" over last year.

This will probably be the last industry show of its type in the Far West until 1960. The Western Air Conditioning Industries Association, sponsor of the event, has decided that henceforth the Exhibit and Conference will be held once every two years, so that there will be a minimum of conflict with national shows. Thus, the group plans no Show again until 1960.

Anyone who has any kind of genuine interest in the air conditioning, heating, ventilating, and refrigeration fields may attend the Exhibit and Conference by registering at Exposition Hall.

The Exhibit will be open from 1 p.m. to 9 p.m. each day starting Wednesday, May 7, and continuing through Sunday, May 11.

Conference sessions will be held on Wednesday night, Thursday afternoon, Thursday night, Friday afternoon, Friday night, and Saturday morning.

More than 150 lines of products are scheduled to be displayed and many will represent the latest developments.

"The Western Exhibit offers an unusual opportunity for manufacturers and their representatives to reach a prime market," declared William P. Tennity, association president. "Statistics and predictions by business experts indicate that the 11 Western state area is currently the most profitable market in the nation."

"And added to this," Tennity (Concluded on Page 20, Col. 4)



W. P. Tennity

Houston Proposes Cooling Licenses

HOUSTON, Texas—A proposed ordinance to license air conditioning and heating contractors has been submitted to the Houston city council, L. R. Sexton, executive secretary to the Air Conditioning Council of Greater Houston, told the NEWS recently.

The proposed ordinance was submitted on March 28 but no action has yet been taken, Sexton said.

Under the proposed ordinance, (Concluded on Page 21, Col. 5)

Worthington Names

Nunlist To Head All Cooling, Refrigeration

HARRISON, N. J.—The board of directors of Worthington Corp. announced the election of Frank J. Nunlist as group vice president of the corporation's Air Conditioning & Refrigeration and Mueller Climatrol divisions, effective May 1.

Nunlist first became associated with Worthington in 1954 as vice presi- (Concluded on Page 21, Col. 5)

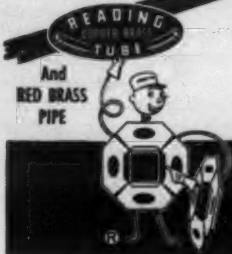
F. J. Nunlist

(Concluded on Page 21, Col. 5)

AIR CONDITIONING & REFRIGERATION NEWS will occupy exhibit space 105 at the Western Exhibit in Los Angeles.

Copies of the 1958 Air Conditioning and Refrigeration Directory containing 376 pages of classified listings of all types of products made by the industry, will be distributed free of charge to those visiting the booth. Visitors will also have an opportunity to look over and order many handy books and reprints in the "Refrigeration Library" series which the NEWS publishes.

**Know
where you're
heading ...
Insist upon
READING!**



READING COPPER TUBING *truly trouble-free* for Refrigeration & Air Conditioning Equipment

Made by Copper Tube SPECIALISTS

READING TUBE CORPORATION
EMPIRE STATE BUILDING NEW YORK 1, N. Y.
WORKS: READING, PA.

Engineer Says

Building Costs Up To Provide Cooling

SAN FRANCISCO—Mechanical and electrical costs of major buildings have steadily increased to provide air conditioning, better lighting, and other comforts.

Dan Vandament of Vandament & Darmstad, consulting engineer, said mechanical and electrical cost 8% of the total cost of a building in the early 1920's, rose to 20% just before World War II, increased to 25% immediately after WW II, and has now reached an average of 35%.

The recently completed Socony-Vacuum building in New York City reached 55%.

Vandament pointed out that electrical and mechanical costs are so closely interlocked they are not easy to separate.

Milwaukee Kills Bill To Levy Tonnage Fee On Air Conditioners

MILWAUKEE—In a surprise vote, the common council killed a proposal to place a yearly tonnage fee on air conditioning units over 3 tons which do not have water-saving devices.

Efforts by Ald. Matt Schimenz, chairman of the council's utilities committee, to get parts of the measure revived where washed aside by other aldermen as they began a discussion on the sale of water to suburbs.

Under council rules, the measure cannot be reintroduced in the same form for at least 90 days. The tonnage fee has been under discussion by the city government for several months.

The vote was 12-7 against a resolution which would have authorized the city attorney to make application to the public service commission (PSC) to amend an order of two months ago. The PSC order authorized the city to charge a \$10 tonnage fee.

C. M. Stainton Joins Controls of America

SCHILLER PARK, Ill.—Louis Putze, president, announced that Charles M. Stainton has joined Controls Co. of America as vice president and director of marketing.

Sales of the firm's Soreng and A-P Controls division product lines will be coordinated under Stainton's direction, Putze said.

Stainton was formerly vice president and director of sales and planning for Robertshaw-Fulton Controls Co.

Fram Names Carmine; To Offer New Filter

PROVIDENCE, R. I.—Appointment of James H. Carmine, formerly president of Philco Corp., as special consultant in sales, advertising, merchandising, and marketing of Fram Corp., has been announced by Steven B. Wilson, board chairman.

Wilson also reported that Fram "is ready to announce to the air conditioner industry its new 'Permachem'-treated air filter which reduces airborne bacteria, mold, and mildew over 90% in the air conditioned room."

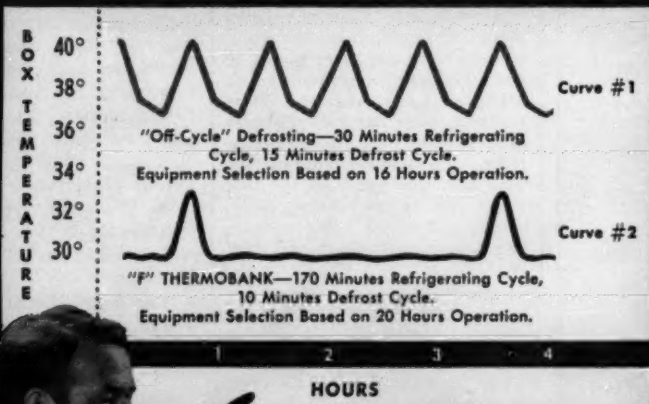
Philadelphia Cooling Sales Rise for First Quarter

PHILADELPHIA—More air conditioners were sold by distributors in this five-county area in the first three months of this year than last, reports the Electrical Association of Philadelphia.

Total number moved from Jan. 1 through March 31 was 14,419 in 1958 compared to 13,528 for the like period a year ago.

However, air conditioner sales dipped somewhat to 5,348 in March as against the 6,079 for the same month last year.

FRESH FOOD INDUSTRY ACCLAIMS NEW KRAMER "F" THERMOBANK



KRAMER UNFOLDS A NEW CONCEPT OF REFRIGERATION APPLICATION FOR FRESH FOOD

To obtain the fullest advantage in the storage of most fresh food, a constant temperature of 30° or 32° must be maintained. Since every defrost cycle results in fluctuations in temperature and humidity, to maintain the best storage conditions the number of defrost periods and the length of each defrost must be reduced to an absolute minimum.

The new "F" THERMOBANK has the fewest possible defrost periods and is the only system that will go into a defrost when it is really needed and not before; this is most essential to prevent unnecessary defrost which results in wide temperature and humidity fluctuations in the storage room. (See Curves)

The "F" THERMOBANK is completely defrosted in the shortest possible duration (10 minutes). No other defrost system, regardless of type, can approach this fast defrost,

but the rapidity of defrost is indispensable to hold the ideal conditions of 30° or 32°.

Because the "F" THERMOBANK guarantees the fewest and most rapid defrosts, equipment is selected for 20 hours operation. This permits the selection of a smaller compressor and a smaller THERMOBANK system resulting in lower first cost as well as economical operation. When the added benefits of "F" THERMOBANK features such as less waste, longer shelf-life, less dehydration, less mold and bacterial infection, and maintenance of "freshness" during storage, are included in the cost estimate, the "F" THERMOBANK is incomparable in value.

Selection and application of the "F" THERMOBANK are simple. Rapid selection tables covering a wide range of cooler sizes for 30° applications are available.

WRITE FOR BULLETIN TV-380

KRAMER TRENTON CO. • Trenton 5, N.J.

44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER



Cast aluminum end frame
for Delco 48-frame motor

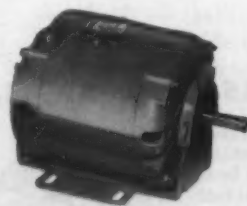
DELCO MAKES THEM STRONGER

Heavy, rock-rigid 48-frame motor end frame keeps shaft and bearing aligned

No problem with rigidity here. This end frame is a rugged, one-piece die casting, designed to withstand the jolts and jars of shipment and years of constant use. Sturdy structural ribs give it enormous strength for its size while maintaining light weight.

The extra rigidity, extra close fit of this end frame is assurance of precision bearing alignment. It's typical of *all* the extras that Delco builds into its 48-frame motor—a motor rock-rigid throughout, as trouble-free as years of engineering experience can make it.

Doesn't your product deserve one? Wouldn't you like the added assurance of *customer* satisfaction that goes right along with Delco Products power—power backed by the world's largest independent electric motor service organization? Simply call your nearby Delco Products Sales Office or contact Delco Products, Dayton, Ohio.



Typical 48-frame split-phase motor. Also available in capacitor-start, shaded-pole, and permanent capacitor types engineered to customer requirements.



DELCO MOTORS

Delco Products, Division of General Motors, Dayton, Ohio

- APPLIANCE MOTORS • INDUSTRIAL MOTORS
- GENERATORS • ACTUATORS
- AUTOMOTIVE AND HYDRAULIC EQUIPMENT
- HERMETIC MOTORS AND CONTROLS
- RESIDENTIAL GARAGE DOOR OPERATORS
- AIR SUSPENSION COMPONENTS



G-E Elects Cordiner Chairman, Paxton President; To Push 'Operation Upturn'

SCHENECTADY, N. Y. — Ralph J. Cordiner has been elected board chairman of General Electric Co. and Robert Paxton, executive vice president-operations, named president to succeed Cordiner, who continues as chief executive officer.

Cordiner succeeds Philip D. Reed, board chairman for the last 19 years, who will serve as finance committee chairman of the G-E board before retiring next year. Cordiner started with the firm in 1922.

Election of the two officers at a board of directors meeting followed G-E's 66th annual shareholders meeting here.

Cordiner told the nearly 3,700 shareholders that G-E's company-wide anti-recession plan, called "Operation Upturn," is

aimed at getting people to step-up product purchases.

"It," said Cordiner, "is not a sales promotional effort based on reducing prices." Rather, he continued, the plan is designed to bring to customers "the better service and better values already available."

G-E, he noted, is enlisting support for the program from its more than 250,000 employees, 45,000 suppliers, and over 400,000 firms that sell or service G-E products.

Cordiner declared, "This is a moment of opportunity. The slight upturn in recent orders could well turn into a steady recovery if every person in business and industry will join in a fresh concerted effort to go after the orders."

Airtemp Official Friedel Killed In Air Crash

LOS ANGELES — Robert H. Friedel, Covina, Calif., regional manager for Chrysler Corp., Airtemp Div. on the west coast, was one of the 47 persons killed last week in the crash of a United Air Lines plane near Las Vegas, Nev. when an Air Force jet collided with it.

A native of Phoenix, Ariz., Friedel joined Airtemp in 1945.

UsAirco Reports Net Sales of \$10,183,097

PHILADELPHIA—U. S. Air Conditioning Corp. reported net sales of \$10,183,097 through last Oct. 31 as compared with \$11,105,565 for the same period the preceding year.

Net loss was set at \$608,660 as against \$972,922 after a nonrecurring charge the year before.

Comprehensive Auto Cooling Issue Has Much Information

Did you read the comprehensive coverage on auto air conditioning in the April 21 issue? The stories and articles covered such things as complete figures on sales of auto cooling units by both auto manufacturers and independent makers of units; what field installers thought about the equipment on the market last year; the results of tests which show that comfort cooling cuts driver-fatigue and accident-proneness; the kind of outlets that sell the units in the field.

Starting on page 1 and continuing on pages 25-27, 30-35, and 39, there is a wealth of information in the April 21 issue for anyone interested in auto air conditioning.

Vice President-Sales

Hibshman To Succeed Bross at O. A. Sutton

WICHITA, Kan. — H. W. Hibshman, formerly with Hotpoint Co., will succeed Albert S. Bross as vice president of sales and distribution for the O. A. Sutton Corp. on May 1, it was announced by H. F. Hildreth, president and general manager.

Hibshman had been with Hotpoint for two years as marketing manager of the television department.

(He was succeeded at Hotpoint by D. F. Johnston who became marketing manager of the newly combined television and air conditioner department. Hibshman headed the new department for exactly one day.)

Lehman Named..

(Concluded from Page 1, Col. 2)

Frigidaire Div.) will be responsible for the over-all sales activity of residential, commercial, and automobile air conditioners, home heating equipment, commercial ice makers, and the quantity builder business.

"This move will permit Frigidaire to put greater emphasis on the air conditioning and heating phase of our business," stated C. H. Menge, Frigidaire's general sales manager.

Menge said that Frigidaire is entering the 1958 air conditioning selling season with broad new lines of equipment. Introduced early this year was a new factory-assembled central residential system that installs as a package through the wall into the furnace. Frigidaire is now also introducing new vertical and horizontal air conditioners to its dealer organization, Menge said.

Lehman has been associated with Frigidaire and General Motors for 27 years, serving as commercial zone manager and supervisor of Frigidaire's direct factory sales.

a fine new product...

WESTINGHOUSE MOBILAIRE®

Portable Air Conditioner

with a fine new selling feature...

strong, lightweight, rustfree ALL-ALUMINUM CABINET



There's big capacity cooling in the new Mobilaire 1 HP Portable (7½ amps. 115 volts) and there's big convenience, too, in the all-aluminum cabinet. It's strong yet light in weight... so easy to handle your customers can take it home and put it in the window themselves. There's customer appealing quality in the name Westinghouse. And there's also customer appealing quality in the name Reynolds Aluminum... the aluminum that's used in the Mobilaire cabinet.

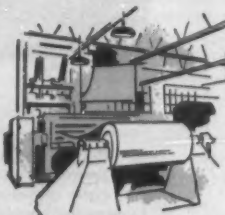
MEMO TO APPLIANCE DEALERS



There are aluminum features in most of the appliances you sell. Point out these features and the customer benefits offered by strong, lightweight, rust-free, attractive, easy to clean aluminum. And if it's Reynolds Aluminum your story is even stronger because Reynolds is the name your customers and prospects know best. Remember—millions choose Reynolds Aluminum by name. Millions have made Reynolds Wrap All America's First Choice by an overwhelming margin.

Watch Reynolds All-Family Television Program, "DISNEYLAND," ABC-TV.

MEMO TO APPLIANCE MANUFACTURERS



Reynolds offers a complete aluminum service including styling, design, engineering and fabricating assistance. Included among Reynolds tremendous fabricating facilities are complete facilities for all types of finishing including color anodizing. For details on any or all of these services, write Reynolds Metals Company, P.O. Box 1800-AS, Louisville 1, Ky.

REYNOLDS ALUMINUM

The Finest Products
Made with Aluminum
REYNOLDS ALUMINUM

CONDITIONED AIR COMFORT when and where needed

WITT
Zone
Air

Room Unit
Air Conditioner



"MIRACULOUSLY QUIET"

These attractively finished cabinet models compliment the decor of the most elaborate surroundings.

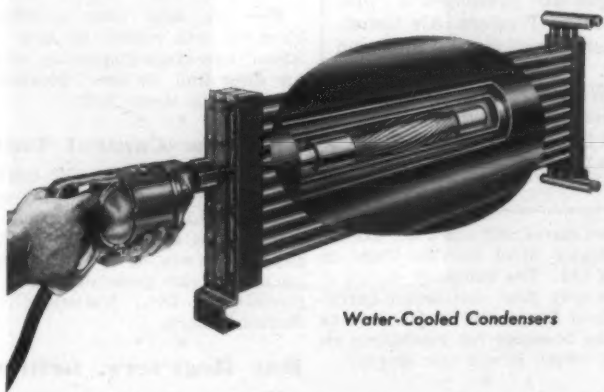
ZONE AIRS are also available in concealed type units. No duct work required. No tearing out of partitions.

Available for direct expansion, hot or cold water or direct expansion and hot water.

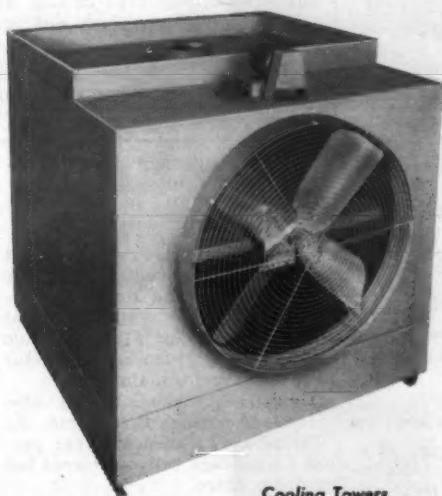
Eight models—1½ to 10 ton capacities. Meat packaging room units—¾ to 2½ ton capacities.

A Few Territories Open Write for Data Sheet

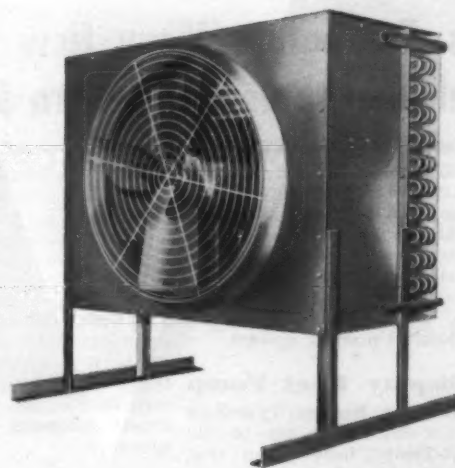
WITT A. H. WITT CO., Inc.
940 N. Sycamore Ave.
Los Angeles 38, Calif.



Water-Cooled Condensers



Cooling Towers



Air-Cooled Condensers



Cooling Towers

So Halstead & Mitchell engineers said . . .

"Here's a line of 'high side' products that cost less to buy, less to operate ...less to maintain"

HM CLEANABLE, COUNTERFLOW WATER-COOLED CONDENSERS

H&M Water-Cooled Condensers perform efficiently even in hottest weather or in crowded equipment rooms. Double-tube design and counterflow of refrigerant and water assure maximum heat transfer. Removable headers permit easy water tube cleaning with a simple accessory tool and an ordinary electric drill. Scale and sludge are removed without harmful chemical cleaners. Available in $\frac{1}{2}$ through 25 tons, all H&M condensers are U/L approved for Refrigerants 12 or 22.

HM COOLING TOWERS WITH THE EXCLUSIVE 20-YEAR GUARANTEE

Ideally suited for all refrigeration, air conditioning and industrial process water cooling applications. Induced air flow and efficient water distribution cool the circulating water thoroughly, even on very humid days. Pressure creosoting of the wood fill makes possible the industry's only 20-Year Guarantee on the wetted deck surface against failure due to rotting or attack by fungus. The tower casings are specially coated with plastic *after assembly* for complete protection against corrosion. Propeller Fan models are available in 2 through 125 tons; Take-Aparts, in 5 through 100 tons; Blower Fan models, in 5 through 25 tons.

HM AIR-COOLED CONDENSERS WITH TURBU-FLO, WIDE-SPACED FINS

Larger coils and exclusive Turbu-Flo fins provide dependable performance for air-cooled systems. The embossed, streamline fins create

better air wash, thus reducing air film resistance and increasing heat transfer by up to 15%. Wide fin spacing keeps coils from clogging with dirt or other air borne particles. Sturdy, lock tight construction won't vibrate or rattle. Design embodies slow speed, deep pitch fans and draw-through draft for quiet, efficient operation. H&M Air-Cooled Condensers are available for Refrigerants 12 or 22, in 3 through 50 tons. Multiple circuiting to suit the individual job is provided.

Ask for all Halstead & Mitchell products at your nearby distributor's or write for descriptive literature. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.



WATER-COOLED CONDENSERS • COOLING TOWERS
AIR-COOLED CONDENSERS • FINNED-SURFACE COILS

Preview

Mfrs. To Feature Many New Products, Highlight Others at Western Show

Product Highlights Set

Recold's new "Deltric" electric defrost coil and York "Flexomatic" hermetic condensing units will highlight the exhibit of Thermal Products, Inc. in booth 212.

Visitors will also observe the Recold "VapoMatic" defrosting system, "Dri-Con" air condensers, and industrial product coolers.

To Display Heat Pump

Visitors can inspect Typhoon's new self-contained air-to-air "Prop-R-Temp" heat pump that operates automatically from a single thermostat setting in booth 403 manned by Comfort Air Sales of California.

Other products on display will include a 10-ton air-cooled air conditioner by Typhoon and a "Panelbloc" infra-red industrial heater by Prat Daniel Corp.

To Focus on Condenser

Three new products will be included in the 15 models of refrigeration and air conditioning equipment and nine coil models to be shown by McQuay, Inc. in booths 301-303.

They are the McQuay "Aircon" air-cooled condenser, available in eight sizes and up to 50 tons capacity in a single unit; the McQuay "Space Miser" low temperature unit cooler, and the "Zero-Frost" automatic hot gas defrost system.

Will Bow Thermometers

New remote indicating thermometer whose indicator can be placed 500 ft. or more from the sensing element will take its bow at the George T. Hall Co. booth 416.

Hall will also display a wide

variety of instruments used in cooling work and automatic controls.

On this and some following pages are presented a "preview" of some of the exhibits set for the Western Air Conditioning, Heating, Ventilating & Refrigeration Exhibit and Conference May 7-11 in Los Angeles.

This preview does not cover all exhibits, because some exhibitors did not submit information, but it will provide a preview for those planning to attend the Show, and gives spot information on some new industry products for those who cannot attend.

To Feature Silencer

By operating demonstrators set up in booth 415, visitors can hear for themselves the sound absorption difference between Industrial Acoustics Co., Inc.'s new module "Quiet-DUCT" silencer, a regular lined duct, and a plain duct.

Industrial Acoustics will also exhibit for the first time its "Quiet-VENT" silencers that permit air passage between rooms but shut out noise.

Perforated Metals Set

Perforated metals for balancing air conditioning systems and ex-

panded metal will mark the exhibit of Ziegler Steel Service Corp. in booth 121. The company claims it is the only steel distributor carrying Roof Deck used in plenums as well as housings for machinery on roofs, which it will also display.

To Center Compressors

New Bell & Gossett Co. refrigeration compressors will be used in several ways to represent a full line of units from 7½ to 150 hp. in booth 103.

Trying to impress visitors that it is in air conditioning and refrigeration all the way, Bell & Gossett will also show a 15-hp. condensing unit, the latest B & G packaged liquid chiller.

To Highlight Filters

For the first time anywhere, Farr Co. will exhibit its new "Hi Kleen" two-stage disposable, media air filter and its new "Microloc" air filter in booth 302.

To Show Control Valve

New Schade series 30 control valve will be among steam specialties exhibited in booth 507 by L. J. Prues & Associates. Principal exhibit will be a "Cyclotherm" package steam generator made by Cyclotherm Div., National-U. S. Radiator Corp.

Has Registers, Grilles

Krueger Air Conditioning Co. will display its complete line of commercial and residential side wall grilles and registers, including a variety of accessories in booth 215.

A new line of mixing and fire dampers along with square and round ceiling diffusers will be in the 19-ft. wide booth.

Sets Boiler Display

Cutaway model of its WG-150 copper tube boiler will appear in Ajax Boiler & Heater Co.'s booth 408. This boiler will be equipped with metalized headers and magnesium anodes and controls normally used on swimming pool installations.

Also on display will be 1,000,000 B.t.u. boiler for space heating, steam boiler with electronic controls enclosed in cabinet, and a packaged unit for use of gas and oil.

Air Cleaner Lines Due

Electro-Air Cleaner Co., Inc.'s exhibit in booth No. 211-A will include two new lines of electronic air cleaners which will be exhibited for the first time in the western states.

Hi-C "High Capacity" equipment featuring Electro-Air's patented "inside curve" ionizer will be shown. Electro-Air "Tec Line" units for installation in small and medium sized homes will also be displayed along with other models.

To Show Home Cooling

A display of residential heating and cooling equipment and one small commercial unit will fill booth 206 for Mueller Climatrol. Mueller plans to show a gas-fired highboy winter air conditioner, a horizontal gas-winter air conditioner, an air-cooled summer air conditioner, a cooling air handling unit, remote air-cooled condensing unit, a coil-cabinet unit, and coil units for summer air conditioners.

Shows Pipe Insulation

Armstrong "Armaflex," a recently developed, flexible, foamed plastic pipe insulation with a built-in vapor barrier, will highlight the line of insulation materials the Armstrong Cork Co. will exhibit in booth 508.

Armstrong also will display LT cork covering, "Insulcolor" protective coating, "Monoplast" cold storage room finish.

To Spotlight Coupling

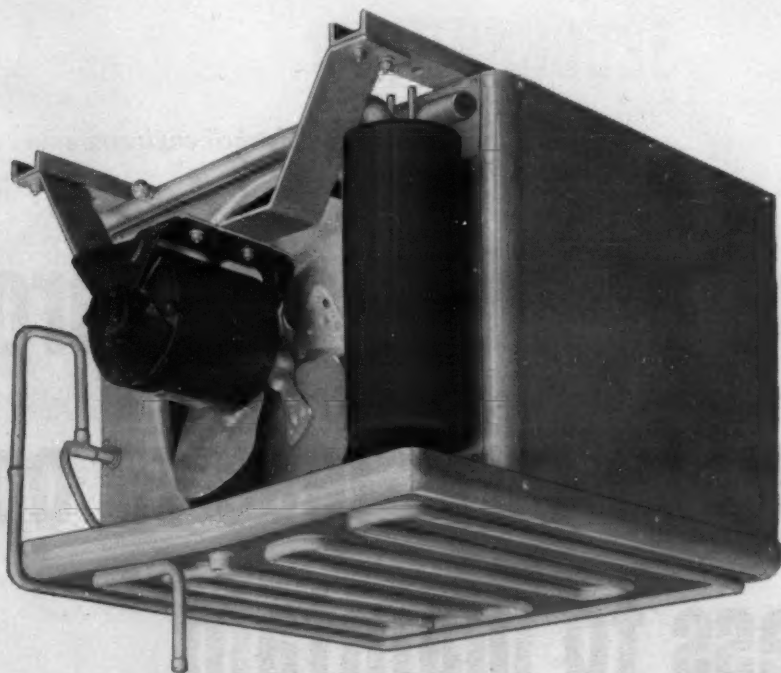
New Aeroquip 5500 series self-sealing coupling for central home air conditioning will hold feature spot in booth 112. Aeroquip Corp. will also show standard hose assemblies for residential and automotive air conditioning.

Highlights Diffusers

Air Distribution Products will display diffusers and volume controls in booth 214-A.

Cooling Tower Due

F. Somers Peterson Co. will exhibit a Koch "Jet-Action" cooling tower and American Metal Hose vibration eliminators in booth 510.



RECOLD'S VAPOMATIC IS NOW NUMBER ONE CHOICE FROM COAST TO COAST

THE EVIDENCE:

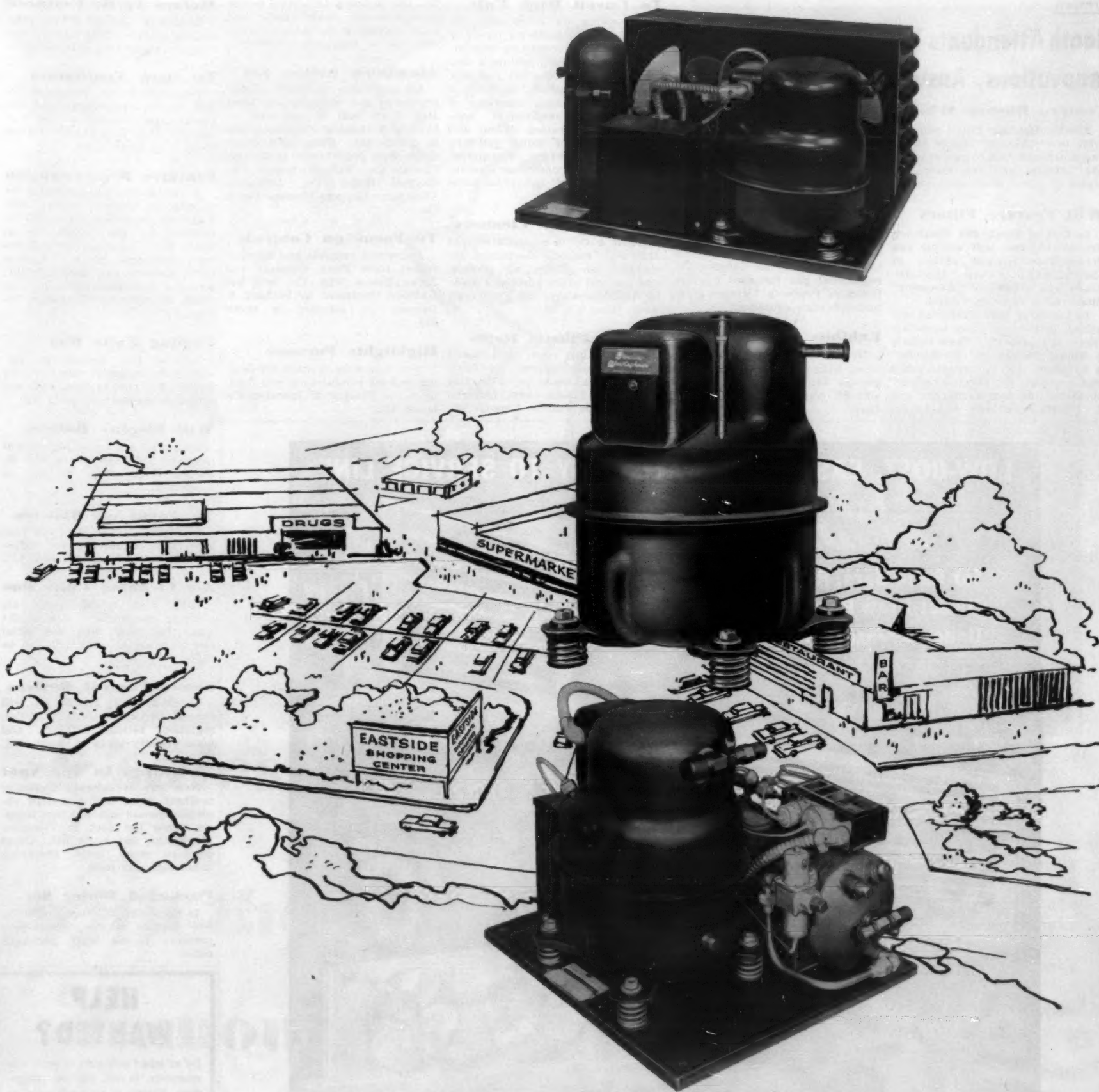
- Tops in units sold
- Tops in dollar volume

RECOLD CORPORATION

7250 East Slauson Ave., Los Angeles 22, Calif.



See Recold Products in booths 212 and 312
at the WESTERN EXHIBIT



FIRST FULL HERMETICS IN NEW SIZES AVAILABLE FOR 3-PHASE

Now, 1, 1½, and 2 h.p. compressors and condensing units designed for 3-phase, 208-220 volt, are ready for your installations in the new shopping centers.

Another Bendix-Westinghouse "first"—we recognized the need for the low-price advantages of the full hermetics and are supplying these units today wherever 3-phase circuits are in use.

These full hermetic, 3-phase units in the 1 to 2 h.p. range incorporate all the features that are building a solid reputation for Bendix-Westinghouse. They are quiet and efficient—dependable and trouble free.

If you haven't gotten the Bendix-Westinghouse compressor story, give us a chance to lay this remarkable story in front of you. It's a report of

nearly 200 satisfied customers in less than two years, many of whom report fewer line rejects and field returns—a decided cost saving to them.

You owe it to your company to test and try Bendix-Westinghouse cost saving compressors. A phone call will get samples on the way to you promptly. Just telephone HArrison 4-6471, Evansville, Indiana.

Bendix-Westinghouse

EVANSVILLE, IND.

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio—Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.

Preview

Booth Attendants To Demonstrate Product Innovations, Answer Visitors' Questions

Centers Blower Wheel Favors Cooling Towers

Alladin Heating Corp. will exhibit new "Airfoil" blower wheel and mushroom ventilators in booth 404. Alladin will also show two styles of power roof exhausters.

Will Feature Filters

In half of booth 406, Preferred Equipment, Inc. will exhibit and demonstrate several models of Cambridge Filter Corp. "Absolute" filters and a bank of "Aerosolve" filters on a revolving stand.

In the other half, Preferred will exhibit products of other manufacturers it represents. These include a Young "Roomaire" conditioner, a Skidmore unit condensate pump and receiver, a "Thermxchanger" shell and tube heat exchanger, and a "Uni-Silencer" duct sound trap.

Favors Cooling Towers

New design cooling towers by E. D. Goodfellow Co., Inc. will be exhibited by Air Equipment Sales Co. in booths 405 and 407.

In addition, the manufacturers' representative will display propeller type roof fans by Allen Cooler & Ventilator, Inc., centrifugal fans by Bishop & Babcock Mfg. Co., commercial humidification apparatus by the Bahnson Co., residential gas furnaces by Custom-Aire Products, Dryomatic dehumidification equipment.

Exhibits Exhausters

New belt-driven exhausters, along with power roof exhausters, gravity vents, fans, and blowers will fill booth 210 for Brookside Corp.

To Unveil Deck Unit

Previewing its entry into the field of high pressure air handling equipment Drayer-Hanson will unveil its new hot and cold deck unit model 216 in booths 101 and 202.

Other attractions include a miniature working model of "Perma-Fan" evaporative condenser, an operating 25-ton air-cooled condenser using pull-thru principle, a 5-ton "Royalaire" packaged air conditioner, re-designed "Spotaire" individual room air conditioners.

To Show Air Cleaners

Burke & Co. in booths 211B and 213 will exhibit electronic air cleaners, air filters, air coolers, and gas and vapor adsorbers made by Air Filter Corp. and Pittsburgh Plate Glass Co.

Favors Plastic Items

New plating room duct board flooring, plating barrels, and fume air washers made of Fiberglas reinforced plastic are featured products exhibited by Line-O-Coat

Co., Inc. in booth 117. Acid tanks, storage tanks, fume hoods, and fume ducting of the same material will also be displayed.

Aluminum Grilles Set

All aluminum anodized grilles, registers, and diffusers by Titus Mfg. Corp. will be exhibited by Cooling & Heating Engineers, Inc. in booth 401. These will share space with products of Barnebey-Cheney Co., Buensod-Stacey Co., Raypak Boiler Co., Vibration Eliminator Co., and Peerless Pump Co.

To Focus on Controls

Automatic controls and solenoid valves from Penn Controls and Jackes-Evans Mfg. Co. will get featured treatment by Richard S. Dawson Co. situated in booth 317.

Highlights Furnace

New 8-in. wide furnace for heating and air conditioning will highlight the Frasher & Johnston Co. booth 418.

Motors To Be Featured

Diehl Mfg. Co. will display commercial motors, fans, air circulators, and ventilators in booth 518A.

To Show Ventilators

Donaldson Power Ventilator Co. will exhibit centrifugal and impeller type ventilators and forwardly and backwardly curved blowers in booth 216A.

Features Demonstration

A radioactive demonstration involving a Geiger counter and scaled-up condenser tubes will be featured by the Calgon Co. in booth 209. The company will exhibit five new items; waterless hand cleaner, gas leak detector, economy powdered acid, ice machine cleaner and "Corrosion Inhibitor CS."

Cooling Units Due

Natural Gas Equipment, Inc. will show Janitrol's summer and winter air conditioners and air-cooled compressor in booth 410.

Will Display Boilers

Industrial hot water boilers will comprise the exhibit of Sid E. Parker Boiler Mfg. Co., Inc. in booth 125.

To Focus on Blowers

Peerless Electric Co. will feature large commercial and industrial fans and blowers in booth 413.

Air Cleaning Units Due

High capacity electronic air cleaning equipment is new at the Trion, Inc. booth 305. Residential and commercial units will also be there.

Shows Control Devices

Tuttle & Bailey Pacific, Inc. will exhibit air control devices, grilles, registers, ceiling diffusers, and high velocity units in booth 411.

Mountings In Top Spot

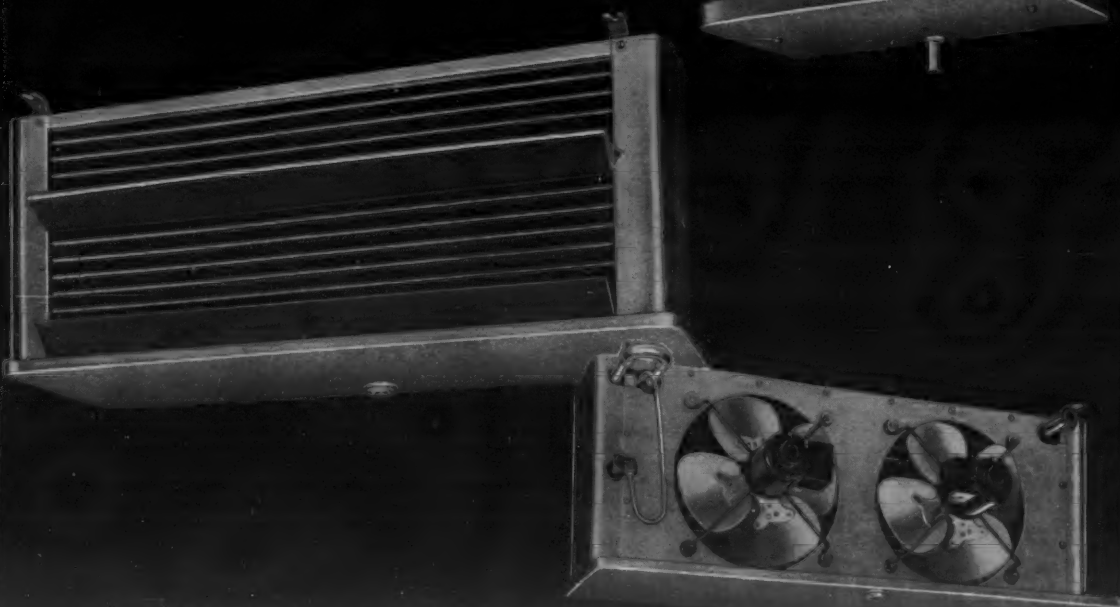
New line of colored Neoprene-in-Shear noise and vibration absorbing mountings and pipe hangers takes top spot in Vibration Mountings, Inc. booth 516. Other displays show noise absorbing mountings and pads.

Packaged Boiler Set

In booth 417, Western Boiler Co. will feature its new three-pass pressure forced draft packaged boiler.

LOW-COST, EASY TO INSTALL, EASY TO SERVICE LINE

by **Tenney**
for Back Bars, Reach-Ins,
Direct-Draw Bars,
Under-Counters, Low Boys



TENNEY all-new, all-aluminum mx unit coolers

- RUSTPROOF, LIGHTWEIGHT ALUMINUM CASE
- COIL CONSTRUCTION completely non-ferrous
- MINIMUM PRESSURE DROP CIRCUITING, conservative ratings
- AMPLE ROOM FOR TX VALVE
- EASY TO INSTALL, keyhole slotted hangers on unit
- FACTORY ASSEMBLED unit hangers, drain fittings
- 2-WAY MOUNTING standard factory equipment on MX-9 through 17
- QUIET, EFFICIENT fan and motor combinations
- LIFE LUBRICATED standard motors; easily replaced in field



Write for Bulletin 118-58

Engineers and Manufacturers
of Refrigeration and
Environmental Equipment

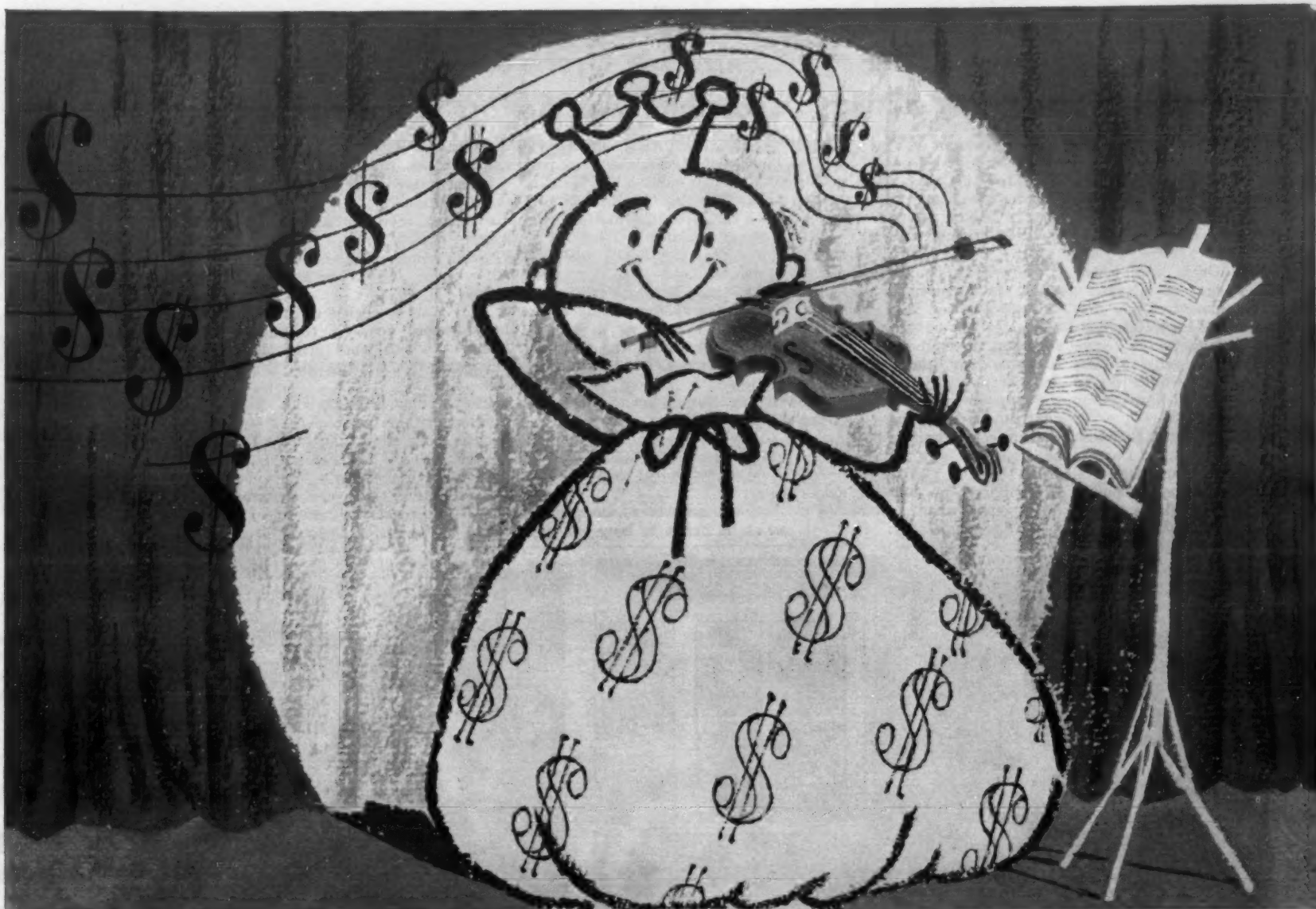
Tenney
ENGINEERING, INC.

1090 SPRINGFIELD ROAD, UNION, NEW JERSEY • PLANTS: UNION, NEW JERSEY AND BALTIMORE, MARYLAND

HELP WANTED?

I'm an expert with years of world wide experience. In fact, wherever refrigerators, freezers or air conditioners are repaired by smart businessmen, you'll find me. My name is Frankell's Hermetic Compressor Opener. I can open any shape compressor (up to 20" in dia.) regardless of the weld. And best of all, I take only two minutes of your time to do it! Or any one's time for that matter — I'm that easy to operate — No Gimmicks! No Fixtures! No Jigs! Remember, when you open and repair a hermetic compressor, the profits are big. And just one hermetic job a week and I'm paid for in full. I'm recommended by the world's leading firms. These are just a few of my references: American Motors Corp., Kelvinator Div., Detroit, Mich.; Siemens, Erlanger, West Germany; Sealed Unit Parts, N.Y.C.; Tecmar-Carrier, Maricao, Venezuela; Jones Refrigerator Co., Raleigh, No. Carolina, and many more. I cost only \$695 net F.O.B. N.Y. or I can be rented monthly for an amazingly low cost. Write for complete information today. Write Dept. G Frankell Manufacturing Co., Inc., 1074 Home St., N.Y. 59, N.Y.

Export Facilities



★ *sales music is sweeter*

with the

famous

engineering of

CHRYSLER

Airtemp

The name "Chrysler" is synonymous with engineering know-how. This technical skill and knowledge is soundly built into Airtemp cooling and heating. Customers realize this fact—full well! And, briefly put, this is one of the sound underlying reasons why Airtemp dealers make more money.

There are other reasons, too, why Airtemp dealers make more money—

- The Airtemp line is complete—really complete—with 297 cooling and heating models. They can satisfy *any* cooling or heating need!
- Airtemp dealers *keep* their initial sale profits because they have fewer customer complaints and service calls.
- *Pre-tested* merchandising helps and incentive programs.
- Special training for dealers and their personnel at Chrysler Corporation Service Centers.
- Factory advertising in your local markets.

Want to make sweet sales music? Then tie up with Airtemp—the profit franchise! Just mail the coupon below.

AIRTEMP DIVISION, CHRYSLER CORP.
DEPT. AC 4-58, DAYTON 1, OHIO

Please send me full information on an Airtemp franchise.

NAME.....

ADDRESS.....

CITY.....ZONE.....STATE.....

Launches Ad Support Campaign

Carrier Reports 'Enthusiastic' Backing For B.t.u.h. Room Conditioner Rating

SYRACUSE, N. Y. — Carrier Corp. reports "surprisingly enthusiastic support" following its recent announcement to drop horsepower ratings in favor of B.t.u. for room air conditioner capacities.

Russell H. Gray, vice president in charge of Carrier's Unitary Equipment Div., disclosed that three major air conditioning manufacturers have endorsed his company's stand and declared they would like to see the reference to horsepower discontinued.

The National Better Business Bureau also commended Carrier on its position, and asked for reprints of the company's policy declaration to distribute.

Allen E. Backman, executive

vice president of the bureau, wrote Carrier officials, "we are delighted and encouraged by the stand your company is taking on the use of proper terms in identifying a room air conditioner."

Continuing its drive to supplant horsepower with B.t.u. ratings, Carrier is launching a consumer advertising campaign for local newspapers. "We hope to have our distributors and dealers take this information to the consumer so some of the confusion will be dispelled when the air conditioning selling season is under way," states Gray.

In the ads Carrier will ask the public to no longer consider horsepower when purchasing a room air conditioner.

To Promote Heating, Cooling

Contractor Uses Furnace Stickers, Direct Mail, Classified Ad, Solicits Help from Utilities

CANOGA PARK, Calif. — A variety of methods are used by Paul Lewis and Lou Hull of Lewis Heating Co., Inc. to promote their heating and air conditioning business.

For example, Lewis and Hull believe in letting the occupant know that Lewis Heating installed the system in his home.

If the system is a heating system, they want the occupant to know that Lewis Heating has installed it so that air conditioning may be accomplished with a minimum of expense.

Matched to the furnace, a casing built to hold a coil is installed with the heating system.

So the homeowner may know what he needs to have air con-

ditioning, a sticker is pasted to the furnace detailing the air conditioning cooling coil and related equipment, which Lewis Heating is ready to add to his system at any time.

One method of advertising is not enough, Lewis Heating has found.

They use a series of direct mail pieces adapted to their business which were originally suggested by Day & Night Mfg. Co.

They follow through with the builder. After the home is sold they ask the name of the buyer. If this is not available they send a letter to "occupant" at the address in their files. At the time the house is built they make a record of the address,

in every case where they install the heating system.

They have a comprehensive ad in the classified "heating" listings in the yellow pages of the greater Los Angeles area Northwestern Section telephone directory. This ad is a model of concise information:

"Heating and air conditioning
"New & existing construction
"Day & Night, Holly, Utility,
Arctic Circle

"Free estimates
"Terms to fit your budget."

In the field of business solicitation in old homes Lewis Heating maintains contact with both gas and electric utilities. They watch for modernization notices, and building permits.

A number of builders interested in remodeling work are able to give them leads.

In addition, Lewis Heating uses display advertising in neighborhood papers, stressing that their systems make homes liveable. At appropriate seasons they bring out the advantages of air conditioning in the San Fernando valley climate.

3,715 Inspections

San Diego Issues 514 Refrigeration, Cooling Permits Under New Code

SAN DIEGO, Calif. — A total of 514 permits were issued during the calendar year 1957 under the new refrigeration and air conditioning code for the City of San Diego.

J. Pat Riley, refrigeration inspector for the San Diego department of building inspection, reports 3,715 inspections were made during 1957.

Contractors doing refrigeration work in San Diego total 39, Riley said. They make installations under the ordinance which became effective Nov. 13, 1956, and includes the American Standards Association B9.1 code for mechanical refrigeration.

San Diego was divided into three sections for inspection purposes on March 17. Each section has its own office, as follows:

Central section with office at civic center, covers the area south of San Diego river and east of Wabash freeway and 40th St., also the Palm City-San Ysidro area.

East section with office at 4067 Fairmount Ave., covers the area east of 40th St.

North section with office at 1349 Garnet Ave., covers the area north of the river and west of 40th St.

Each office checks plans and grants permits for its own area. All permit applications are to be sent to the office in the area in which the job occurs.



"Leave the bag right there, Ferd.

I think we've found our dream home at last. That milk cooler with the H & H tubing proves these people run a first class place."

Makers of cooling equipment for the farm know there's no tubing any cleaner or brighter or more uniform in color than H & H copper tube in 20' lengths, 50' coils or in parts. Temper and grain size are exactly as ordered, ends are crimped, capped or plugged as specified. If you are not now getting tubing like this, stop shortchanging yourself. Call us today.



Expect the BEST
brass and copper
products from

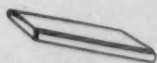
H & H

TUBE AND MANUFACTURING CO.

271 N. Forman Avenue, Detroit 17, Michigan • Offices from Coast to Coast



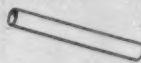
METALFLO



LOCKSEAM



COIL STRIP



SEAMLESS TUBING



TUBULAR PARTS

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzales—25¢ each.

Get your copy

Mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

14 reasons

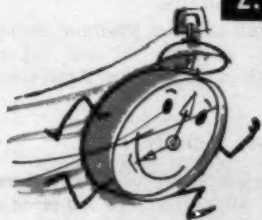
why your "best bet" is to sell

RCA Whirlpool

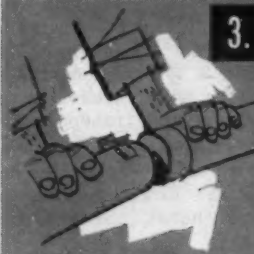
CENTRAL AIR CONDITIONERS



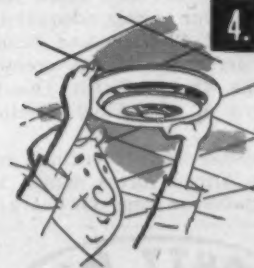
1. A BRAND NAME WITH CUSTOMER CONFIDENCE... the heavily advertised RCA WHIRLPOOL brand name... identified with high quality, dependability, automatic convenience, and the finest engineering.



2. INSTALLATION IN AS LITTLE AS 8 HOURS... with pre-fabricated duct work. Fast, easy, time-saving... entire pre-planned package can be installed in an average home by two men in approximately 8 hours.



3. PRE-INSULATED ALUMINUM DUCTS... merely clamp together for a fast permanent installation. They require no maintenance, are rust-resistant, and have a long, dependable life.



4. QUICK-FIT DIFFUSERS INSTALL IN MINUTES... one of the many reasons why RCA WHIRLPOOL central systems install so quickly. You just drill a hole, slide the assembly in, and nail straps.



5. MORE AIR OUTLETS GIVE MORE EVEN COOLING... no icy blasts in one spot while the corner across the room stays warm... the home is cooled uniformly, from room to room, from wall to wall.



6. SMOOTHER AND FASTER AIR FLOW... the aluminum ducts provide fast, quiet air flow to all parts of the home... for more customer satisfaction.



7. LESS NOISE AND LESS VIBRATION... will make your customers happier. All parts are insulated to absorb sound... all moving parts are mounted on rubber to reduce vibration.



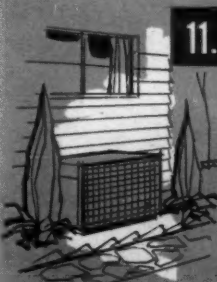
8. 100% AIR COOLED OPERATION... eliminates complex and expensive water controls, pumps, and cooling towers. Also eliminates costly water bills and maintenance.



9. ONE EASY-TO-SET CONTROL... that users just set and forget. The unit requires no attention... the need to "start up" in the spring and "pump down" in the fall is gone forever.



10. LESS INSTALLATION FUSS AND MUSS... RCA WHIRLPOOL central air conditioners are designed specifically for the job and are installed with special tools.



11. SMART, GOOD-LOOKING APPEARANCE... the units are neat and compact... they can be placed out in the open... there's no need to close them in.



12. ECONOMICAL TO BUY AND OPERATE... these new units bring the cost of whole house air conditioning down to the point where virtually anyone can afford it.

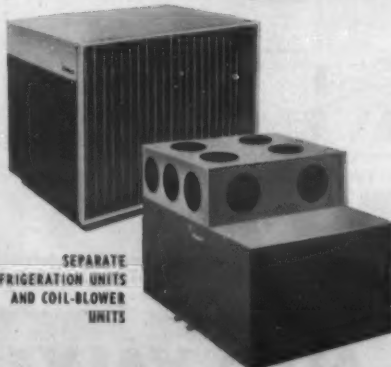


13. 5-YEAR WARRANTY AT NO EXTRA COST... the compressor and sealed cooling system are protected under the 5-year warranty. The complete air conditioner is warranted against defects for 1 year.

SELF-CONTAINED UNITS



SEPARATE REFRIGERATION UNITS AND COIL-BLOWER UNITS



14. YOU HAVE A COMPLETE SELECTION OF SYSTEMS

... for every type of home. There are 2-hp. self-contained units that combine the refrigeration unit and blower coil in one... separate unit systems from 2- to 5-hp. capacities... and separate cooling coils for fast, low cost installation in existing heating ducts.

SALES MANAGER, CENTRAL AIR CONDITIONING DIVISION
WHIRLPOOL CORPORATION, Box ACN-4, St. Joseph, Michigan

I am interested in learning more about RCA WHIRLPOOL central air conditioners.

Name _____

Firm Name _____

Address _____

City & Zone _____ State _____

Use of trademarks and RCA authorized by trademark owner Radio Corporation of America

RCA WHIRLPOOL Home Appliances... Products of WHIRLPOOL CORPORATION St. Joseph, Michigan

Join up!... it's easier to sell RCA WHIRLPOOL than sell against it!



AROUND THE WORLD IN 50 DAYS

"Inside Dope" by GEORGE F. TAUBENECK



(Continued from Page 1, Col. 1) resources for building materials is turning out to be highly profitable.

Moreover, a specialized textile industry, devoted to the making and marketing of colorful Hawaiian and Polynesian prints for women's dresses and men's sport shirts, has become BIG BUSINESS in recent years.

This is the NEW Hawaii. A former vacation paradise has become in addition a fast-moving industrial and commercial site. Corporate "empire builders" are making hay where (as well as when) the sun shines all the time.

Only eight States of the Union have higher per-family buying power. Furthermore, consumer desires in Hawaii are similar to

the wants of statehood Americans. Chief difference: Hawaiians have more "disposable income" than residents of The States. What a market for "mainland" products!

Finest climate in the world helps make Hawaii one of the healthiest living-spots anywhere. Educational, housing, recreational, and social conditions in the Islands are so admirable that theorizing sponsors of a mythical Utopia would be envious.

Its tolerant social climate has given Hawaii the reputation of being a "Twenty-First Century Community."

Scottish, Swedish, Spanish, Portuguese, Chinese, Japanese, Filipino, and Korean immigrants have been blended with native

Hawaiians to comprise a salubrious single society which is noted for its congeniality, friendliness, and homogeneity.

Busy and modern, the commercial and industrial center of the world's largest ocean has little time or inclination to be petty. "Live and let live" could be its motto.

Currently it requires only eight or nine hours by air to get there from San Francisco.

Hawaii will be even closer to Everywhere with the arrival of jet transportation next year. (Jet planes will cut flying times in half.)

It's a Youthful Land

Hawaii's population pattern is much like that of the United States proper. Exception: it has

an unusually high percentage of military personnel; and the average age of its inhabitants is considerably lower than that in most American states or in any of the nations of the world.

More than half the residents are under 24 years of age! That statistic insures a young and vigorous labor force for many years to come.

Wondrously tranquil climate (67° low in January, 83° high in August) good soil and topographic variety combine to help Hawaiian farmers grow virtually any crop known to biologists.

The sea provides a second great natural resource. Hawaii's economy benefits not only from fish taken from the sea, but from ships that travel on it.

Lava ash and rock, which have high silicate content, not only provide building materials, but have become important in the manufacture of compounds capa-

ble of withstanding extremely high temperatures—for use in jet engine and intercontinental ballistic missiles.

Tropical hardwoods grow faster in Hawaii than in any other area of the world. These natural resources also have become suddenly important to our nation's defense program.

Pure water in great quantity is another important industrial resource. A natural underground reservoir, described by engineers as "practically inexhaustible," attracts attention from factory people, and helps the industrial air conditioning business.

Moreover, Hawaii's municipal water undergoes a natural purification process which eliminates the need for addition of chlorine or other chemical purifiers. The calcium content of Island water is low, so softening is unnecessary.

While vestiges of ancestral languages occasionally are heard in Hawaii, English by far is the dominant language.

Its minor lingual cacophony is almost identical with that found in Detroit—where Polish or Italian or Spanish talk can be heard even now on certain streets and in a few churches.

Racial harmony and cooperation is a normal condition of life here. It is a matter of pride to the people of Hawaii that they are free of discrimination in housing, employment, education, or social affairs.

Hawaii offers a younger, more rapidly growing skilled labor force than any other American area.

World War III?

Its geographic position offers unique advantages to America's naval and military planners.

These Islands are the most centrally located American area in the Pacific; and they combine extensive base and training facilities in a typically American community with excellent communications and transportation facilities.

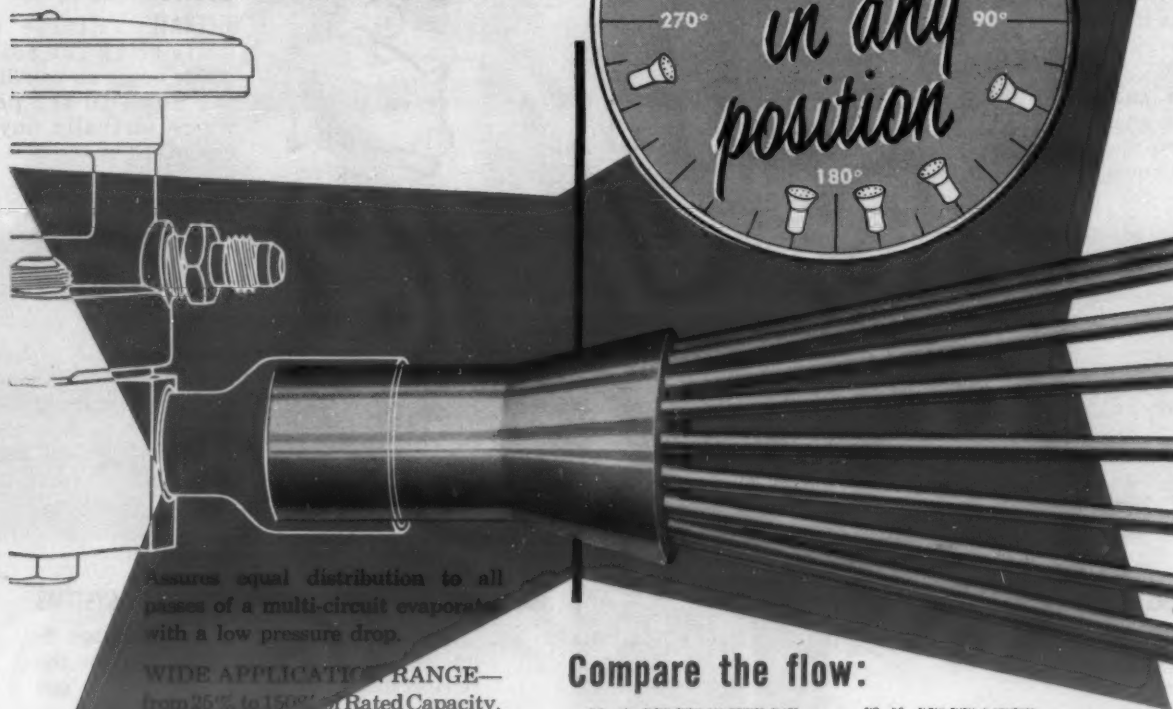
As a result, Hawaii has become the largest permanent American naval, military, and air base.

Our Navy operates an enormous installation at Pearl Harbor and at Barber's Point Air Station. Our Army adequately staffs Fort Shafter, and Schofield Barracks. Marines occupy Kaneohe Camp Smith (headquarters of the Fleet Marine Force).

Hawaii benefits from these extensive armed forces camps in (Concluded on Page 14, Col. 1)

CHECK THE ADVANTAGES...THEN SPECIFY • INSTALL

ALCO'S NEW VENTURI-FLO DISTRIBUTOR



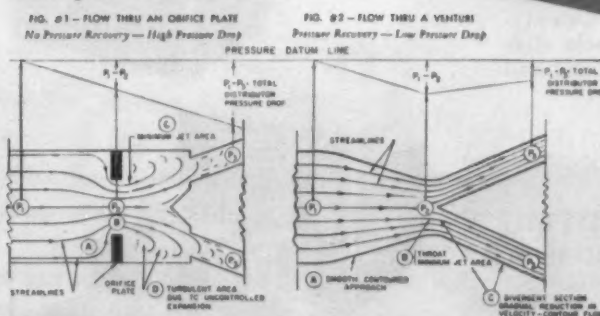
Assures equal distribution to all phases of a multi-circuit evaporator with a low pressure drop.

WIDE APPLICATION RANGE—from 25% to 150% of Rated Capacity.

LOW PRESSURE DROP—permits more economical Thermo® Valve sizing—assures more stable valve control.

ONE PIECE CONSTRUCTION—nothing to come apart, nothing to take apart—No orifices, plates or nozzles needed for capacity regulation.

Compare the flow:



Call your Alco wholesaler—
write for Specifications Bulletin No. 188-57.



- BUY SECURITY
- BUY QUALITY
- BUY ALCO

ALCO VALVE CO.
853 KINGSLAND AVE. • ST. LOUIS 5, MO.

7810

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors • Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves



FOR
MOTOR
OVERLOAD
PROTECTION

MECHANICAL INDUSTRIES
PRODUCTION COMPANY
223 ASH STREET • AKRON, OHIO

PARTNERS IN PROFIT...

**Dealer Ham Holdren and Frigidaire
work together to turn
Service Problems into Sales Profits!**



Meet Ham Holdren, Frigidaire Dealer of Roanoke, Virginia, co-author of a million dollar success story.



His Plan—Service That Never Stops Selling! Ham uses his reputation for dependable service as a plus selling feature. In all customer contacts, before, during and after the sale, he stresses the importance of buying from a dealer who backs up every product with dependable service.



Turning Complaints Into Compliments! Ham's staff of service technicians is primed with up-to-the-minute information—available through the Frigidaire Service Training Program, finest in the industry. The first and lasting impressions they create on service calls win customers—and sales.



Prompt Service Repairs! "On-call" availability of replacement parts and special tools from the nearby Frigidaire District Office assures Ham's prompt response on service calls. Valuable assistance in the organization and operation of his service business is available from the same source.

Frigidaire Dealers, like Ham Holdren, recognize that in today's appliance market, good service is a definite *sales asset*. With the help of Frigidaire, more and more dealers are developing sound service departments as a step toward a more well-rounded sales-service operation—added profits, too.

The Frigidaire formula is a simple one. It is based on sound service principles and easy-to-use service helps available to all Frigidaire Dealers. By following these principles,

thousands of Frigidaire Dealers enjoy profitable service operations and, through adherence to these high service standards, earn for themselves the reputation of "indispensable man" in their communities.

If you want to know more about this successful dealer and his service approach to sales, write FRIGIDAIRE Division, General Motors Corporation, Dayton 1, Ohio for your copy of the "Ham Holdren Story" or ask for a showing of the film based on this dealer's experience.

IN SERVICE ASSISTANCE AS IN SALES

FRIGIDAIRE is on the march



Frigidaire—Built and Backed by General Motors

AROUND THE WORLD IN 50 DAYS

"Inside Dope"

By GEORGE F.
TAUBENECK



(Concluded from Page 12, Col. 5)

many ways. Islanders provide goods and services for military personnel and their dependents, and are employed in many of the offices and shops necessary to the operation of these installations.

The Future 49th State

Here's a fact pre-eminent to an understanding of Hawaii: the Islands are an integral and inseparable part of the United States.

When, in 1900, Congress incorporated the Territory of Hawaii into the Union, the fate and fortune of Hawaii and the 48 states were bound together irrevocably.

The District of Columbia roughly is similar, in inert status, to that of Hawaii. The Constitution, all Federal laws and taxes, and all national rights and obligations apply to Hawaii as they do to various States of the Union, and to Alaska and the District of Columbia.

Citizens of Hawaii are Americans just as the people of Vermont or Nebraska or Oregon are Americans. Differences between Hawaii and the individual States are these:

1. Hawaii has only one representative in Congress, a non-voting delegate;
2. The Governor and Secretary of Hawaii and the judge of Territorial Courts are appointed by the President; and
3. Hawaii has no "electoral college" representation; therefore its citizens cannot vote for our president.

In all other respects, the government of the Territory follows the familiar pattern set by the states. Territorial legislators, city and county officials are elected by the people of Hawaii and are responsible to them.

The Territorial Legislature, which meets in biennial sessions, acts in all matters commonly reserved to the states, and thus performs in Hawaii the same function as State Legislatures do on the mainland.

They're Happy

An atmosphere of friendliness, tolerance, and informality combine with a grandly favorable climate to give Hawaii the world's finest living conditions.

Homeowners in Hawaii enjoy a freedom from natural restrictions, and an abundance of natural advantages.

In addition to hundreds of beaches and parks, the Islands offer a full range of commercial amusements — movies, golf courses, bowling, football, basketball, and baseball.

Excellent camping, hiking, hunting, and fishing facilities are available, also commercial television and network radio.

In essence, Hawaii is an immensely promising State of the Future for all young Americans and young-minded corporate investors.

High Temperature Hot Water Systems Cut First Costs, Ft. Worth Contractors Told

FORT WORTH, Texas — By operating hot water heating systems at temperatures of 240° to 250° F., equipment costs can be reduced sharply, Oslin Nation, Bell & Gossett representative, told the Fort Worth Air Conditioning Association at a recent meeting here.

"Unit heaters can be 45% smaller than when used with 180° water, and corresponding savings can be achieved by reduced piping sizes," Nation said.

It was the development of quieter pumps with improved seals that gave impetus to the present trend to higher temperatures for heating, he pointed out.

"High temperature systems,

however, must be designed right and installed right," he cautioned. "The earlier, conventional systems had a built-in safety factor. If they weren't delivering as much heat as was required, you could always raise the temperature of the water, assuming the boiler had ample capacity. That factor of safety carried a lot of jobs along."

No such safety factor exists in the higher temperature systems, he emphasized.

CLEANLINESS EMPHASIZED

High temperature systems also have to be clean "or you'll really have trouble," Nation said, pointing out that this problem usually has been largely

ignored in conventional system.

An acid condition can develop in a high temperature system, due to the type of solder flux employed during installation, and this can lead to gas in the system, Nation indicated to emphasize further the necessity of keeping the system clean.

RELIEF VALVES

Improper selection of relief valves is a more serious problem with high temperature jobs, too, he explained. Relief valves must exactly match the capacity of the boiler, he said.

As for pumps, all too often they are selected with too much capacity in order to be "on the

safe side," Nation declared.

"In fact, 50% of our problems in chilled and hot water systems today result from over-sizing of pumps," he commented.

Location of pumps is important, too, and Nation recommended their being installed after the boiler instead of ahead of it.

In answer to a question, he indicated that high temperature systems probably shouldn't be combined with a chilled water system using the same piping and convectors because of the sharply different requirements in sizing of lines and surface.

A&B Lighting Wins Bid For Cooling VA Building

SALT LAKE CITY—A & B Lighting has been awarded a contract for air conditioning work at the Veterans Administration Bldg. for a low bid of \$5,920.

Why Bundyweld® Tubing meets high



Condenser within outer shell of Norge freezer doubles as anti-sweat coil; its heat helps prevent condensation on outer walls. Coils have been prefabricated at low cost by Bundy; delivered to Muskegon, Michigan, far in advance of need.

BUNDYWELD IS DOUBLE-WALLED FROM A SINGLE STRIP



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-walled and brazed through 360° of wall contact.



NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

SIZES UP TO 1/2" O.D.

Whirlpool Will Permit Gas Refrigerator, Freezer Licensing on 125 Patents

ST. JOSEPH, Mich.—Elisha Gray II, Whirlpool Corp. president, in a letter addressed to the presidents of 18 firms manufacturing refrigerators, announced that Whirlpool is now making available for licensing approximately 125 patents related to gas refrigerators and freezers.

Gray said, "We intend, in the immediate future, to list in the United States Patent Office Gazette as available for licensing on a non-exclusive, reasonable royalty basis, absorption-type refrigeration patents that we acquired from Servel."

Certain patents relating to other appliances manufactured by Whirlpool will also be listed,

making a grand total of about 200 patents available for licensing to interested parties. Whirlpool will continue to list certain patents for licensing from time to time.

Whirlpool, early this year, acquired certain of the Servel physical facilities and patents, and plans to manufacture and market a gas refrigerator under the brand name "RCA Whirlpool."

Form Chattanooga Rses Unit

CHATTANOOGA, Tenn.—Formation of a local chapter of Refrigeration Service Engineers Society is the project of 19 air conditioning and refrigeration men here.

Temporary officers while a charter is being sought are John C. Henson, president; Walter Barger, secretary-treasurer; and Arthur Walters, Elmer Broome, and Henry Graves, directors.

Calif. Courts Hold Licensed Contractor Operating Out of Classification Same as Having No License

PASADENA, Calif.—A contractor operating with a license, but operating out of his classification, is looked on by the California courts as being in the same position as having no license at all, Examiner Harry W. Abrahams of the Contractors' State License Board told the 13th annual convention here of the regional organization of Refrigeration Service Engineers Society.

Abrahams covered fine points of other situations that contractors may find themselves in, so far as related fields are concerned.

SPECIALTY CONTRACTORS CAN HAVE ADDED LICENSE

Specialty contractors may be licensed in additional classifica-

tions without additional cost if they are qualified and take the necessary examinations.

Examinations are a matter of board policy. No applicant gets an oral examination. All examinations are written and a matter of record. Matters a contractor should know include knowledge for the health and safety of the public.

Those in the contracting field were advised by Abrahams to write for the 1957 edition of the Contractors State License Law and Reference Book, which costs \$1.04 from the State Printer, Documents Div., N. 7th Ave. & Richards Blvd., Sacramento.

Abrahams said in the act the legislature provided two con-

tractor classifications, general engineering class A, and general building, class B.

The other 32 classes have been set up by the board. Those related to contractors working in this industry are:

C-10 for electrical contractors.

C-43 for sheet metal contractors, but this does not permit installation of any type of equipment.

C-20 for warm air heating, ventilating, and air conditioning contractors.

C-38 for refrigeration contracting below 50° F.

C-4 for boiler, hot-water heating, and steamfitting contractors.

C-2 for insulation contractors installing any insulating media for the sole purpose of temperature control.

THREE THINGS COOLING CONTRACTOR MUST KNOW

Three things the C-20 air conditioning contractor must know are: control of air movement, air temperature, and air humidity, which Abrahams said are the minimum requirements for air conditioning of the American Standards Association.

The C-4 boiler contractor, when a convector goes into the duct system, gets into some steam work in connection with air conditioning.

The California law says a contractor may do all work "incidental and supplemental to the trades in which he is licensed." Abrahams said the board has dumped the words "incidental and supplemental" and substituted the word "necessary." If the work in question is not "necessary" to the classification the contractor is licensed in, "we do not allow it," Abrahams said.

However, when contractors get into alterations and additions, the situation is very different. In revamping a system in an old building, "incidental and supplemental" get a big play there. "If you figure you will have room to do the job and later find you actually do not have room, then it becomes 'necessary' for you to do things to carry out the job," Abrahams said.

Experience required is that practical knowledge gained by actual observation, learning, and employment in an occupation, in applying for a license. Abrahams said an application becomes an official record of the state of California.

Some applications are "landscaped" to look well in meeting requirements. When the board finds out about any misrepresentation, the contractor does not remain licensed very long, Abrahams said.

An elaborate system for discipline has been set up by the board, pursuant to Article 7 of the act.

Renewal fees have been upped this year from \$7 to \$10, and are payable on or before June 30. New application fees are \$20, and re-examination fees are \$20, effective June 29, Abrahams said.

standards of newest Norge freezer

Exclusive process makes Bundyweld stronger and more resistant to vibration fatigue . . . leakproof by test

Norge Division of Borg-Warner Corp. has set rigid specifications for steel refrigeration tubing: stamina in service; ruggedness in assembly. Only Bundyweld® Tubing measures up to these high standards. Here's why:

An exclusive process (shown below, left) gives Bundyweld Tubing high bursting strength and exceptional resistance to vibration fatigue . . . meets Norge's rigid cleanliness specifications. Bundyweld takes brazing and mechanical operations in stride; stays leakproof by test.

Norge specifies some 125 feet of double-walled Bundyweld for its horizontal freezer alone . . . uses miles more in:

- **Evaporators**—Wrap-around coils for horizontal freezers; serpentine for wire-tube cold shelves in upright freezers.

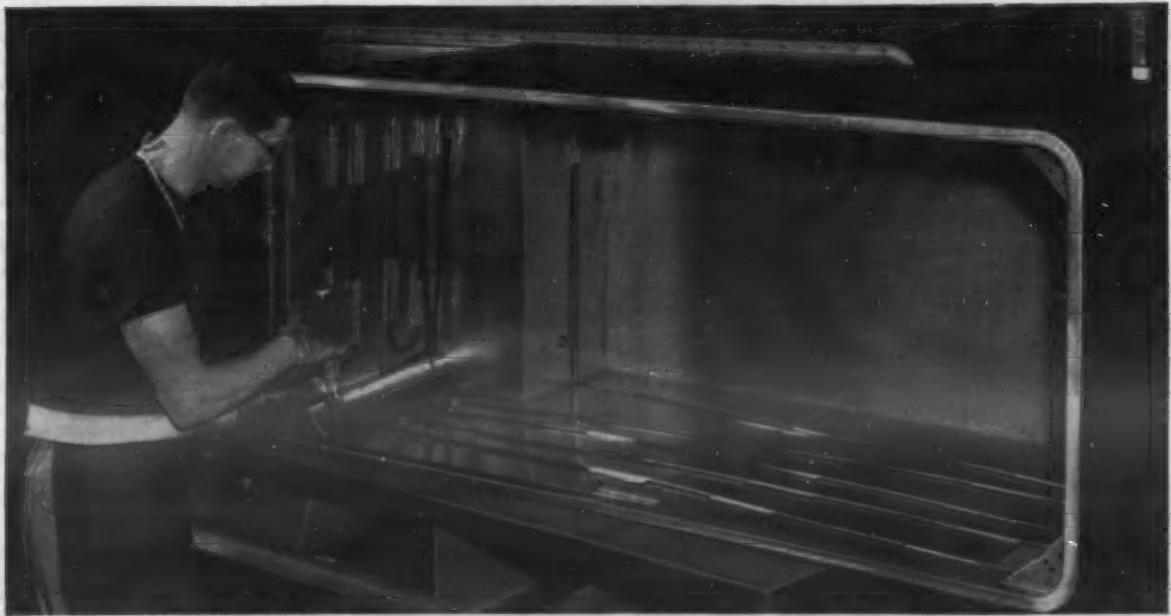
- **Condensers**—Combination condenser—anti-sweat coils for horizontal and upright freezers; refrigerator serpentine for brazed wire-and-tube condensers.

- **Compressors**—Variety of fabricated, sub-assembled parts.

Bundy® leads in engineering and fabrication, too. Design aid from Bundy engineers is yours for the asking. If you need fabricated parts, Bundy mass-produces them economically. Or if you fabricate parts, Bundyweld is available in clean, straight lengths, and in coils up to 2,000 feet long. Cash in soon on this combination: world-famous Bundyweld Tubing and moneysaving Bundy services. Call, write or wire us, today!

BUNDY TUBING COMPANY, DETROIT 14, MICHIGAN

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, ENGLAND, FRANCE, GERMANY, AND ITALY



Evaporator of Bundyweld Tubing is attached with spot-welded clips to inner shell of Norge freezer. Bundyweld is thin enough to conduct heat fast, yet strong enough to take most any assembly operation without collapsing or leaking.

There's no real substitute for

BUNDYWELD® TUBING

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Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.

Air Pollution (1. The Problem)

'Loading' of Air With Contaminants In Industrial Areas Presents a Most 'Irritating' Condition

By Frank Stead, Chief of Div. of Environmental Sanitation, California State Dept. of Public Health, Berkeley*

Effects of Urban Activities On Outdoor Air

Although the subject of this conference is indoor air, outdoor air constitutes what might be thought of as the raw material for indoor air, and consequently anything that changes its chemical composition must be taken into consideration. This is especially true since most buildings are not provided with any means of removing chemical impurities in air admitted.

Outdoor air pollution usually

*Excerpts from paper presented before UCLA Indoor Climate Control Design Institute Conference.

develops in urban areas in three stages which may be entirely separate in time but which usually overlap. The first stage is that of individual point-source problems. For example, smoke, dust, or gas is discharged from a single stack and adversely affects an adjacent area. This type of air pollution is characterized by the following features:

1. The contaminant moves by simple linear displacement with limited dilution with clean air.
2. There is no change in chemical composition or physical state of the contaminant.

3. The zone of influence is restricted to a small downwind area.

The second stage of air pollution to occur as an area develops is pollution of the entire air mass in a metropolitan area. This type of air pollution is based on the concept that the total "loading" of air contaminants discharged to the atmosphere is too great to be adequately diluted by the available air supply. It is a concept of too many tons of contaminant per cubic mile of air.

This type of air pollution has one characteristic in common with the first stage, that is, there is no change in the chemical composition or physical

Considerable abuse has been heaped upon certain parts of California because of its "smog" problem, but because of this problem, state-supported agencies have made extensive studies of air pollution problems. Out of these studies have come important contributions to the general knowledge of the subject, of prime importance to the air conditioning industry.

One of these studies, made by Frank Stead of the California State Department of Health, describes the nature of air pollution—particularly man's contribution to it—and makes the point quite emphatic that "fresh air" is not necessarily "pure" air.

The other study, by Neal Richardson and Wilbur Middleton of the University of California, relates the results of tests on an evaluation of filters for removing irritants from polluted air. (See page 19).

state of the contaminants after they reach the air. This stage of air pollution does, however, introduce the following entirely new considerations:

1. A knowledge of the available air supply on a given day requires knowledge of the topography of the air basin, the

effective "ceiling height" as determined by the temperature structure of the air in the basin, and the ventilation rate as governed by horizontal wind motion.

2. Many types of contaminants are simultaneously present.

3. It is not possible to relate an adverse effect on a small group of people to a single offender.

Coping with this type of air pollution requires a knowledge of the over-all inventory of substances discharged daily to the atmosphere and a knowledge of the daily meteorological characteristics of the area.

This is the type of air pollution which for many years plagued the cities of Pittsburgh and Detroit and which recently has been successfully controlled in those areas. This problem to a greater or lesser degree faces every metropolitan area in the United States and has for years been a matter of concern to the industrialized cities of Europe.

SMOG PROBLEM

The third stage of air pollution, and the one which is only now beginning to be understood, is that which, for lack of a better name, has come to be called "smog." First recognized in Los Angeles, Calif., at the beginning of World War II, it has now not only spread to the other metropolitan areas of that state but has been recognized in other parts of the United States.

The putting together of the jigsaw pieces of the smog picture has been a most amazing chapter in scientific history and constitutes a true detective story, stranger than fiction. In reaching even the present imperfect understanding of this phenomenon it has been necessary to abandon some of our most cherished "common sense" assumptions. After 10 years of almost frantic research as a cost of well over \$10 million, the following characteristics of smog can be listed with reasonable assurance:

1. Smog results from reactions taking place in the atmosphere itself between raw materials or precursors (harmless in themselves at the concentrations found), catalysts, and atmospheric oxygen which form new compounds not originally present.

2. These reactions take place between gaseous compounds at extraordinarily low concentrations (less than one part of precursor or catalyst to one million parts of air).

3. Energy in the form of sunlight is necessary for these (Concluded on next page)

BLUEPRINT for LEADERSHIP

In AIR COOLED equipment for commercial and industrial use

Recognizing a trend in commercial and industrial air conditioning to air-cooled equipment, General Electric maintains a position of leadership to enable G.E. Dealers to keep pace. General Electric's

complete air-cooled line enables you to offer the widest selection of ceiling- and floor-mounted units—in capacities that cover the needs of prospects, regardless of their requirements.

LEADERSHIP

Air-cooled ceiling-mounted units

General Electric Air-Cooled Ceiling-Mounted Units are completely self-contained. Take no floor space—may be shelf-mounted. 3 and 5 ton capacities. Ideal for stores, offices, factories—including Zone-by-Zone installations for large users.

LEADERSHIP

Air-cooled ceiling-mounted split systems

Consist of remote condensing unit that may be stationed anywhere, inside or outside—and handsome, lightweight air-handling unit that may be shelf- or ceiling-mounted, with or without ductwork. Capacities range from 3 to 10 tons.

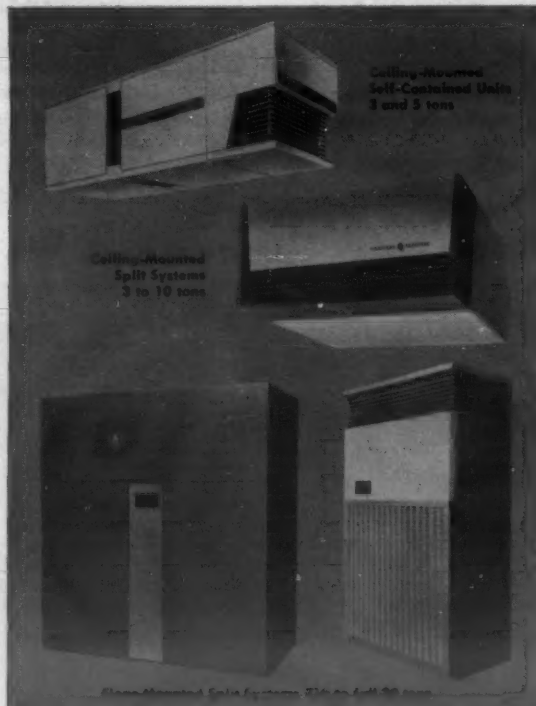
LEADERSHIP

Air-cooled floor-mounted split systems

Consist of remote condenser that may be stationed anywhere, inside or outside—and handsome air conditioner that may be stationed in or away from area served. Capacities from 7½ to full 20 tons.

General Electric also offers a complete line of water-cooled, self-contained equipment from 3 to 30 tons. Zone-by-Zone installation of General Electric units provides many advantages over central plant systems.

All units carry General Electric's 5-year warranty on sealed motor-compressor. Heating coils may be added.



A BIG PROFIT PLAN FOR YOU

Quality products are only the beginning! Your General Electric BLUEPRINT FOR LEADERSHIP Plan gives you a course in selling—attractive financing plans—wallpapering national advertising and promotion—guided local advertising—and the selling power of the General Electric name. Contact your nearest General Electric Distributor or mail the coupon today. General Electric Company, Commercial and Industrial Air Conditioning Dept., 5 Lawrence St., Bloomfield, N. J.

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I am interested in signing up with General Electric so that I can benefit from G.E.'s Blueprint for Leadership Plan.

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(Concluded from preceding page) reactions to proceed and on removal of sunlight the reaction is partially reversible.

4. The precursors of these reactions are hydrocarbons; the principal catalyst is nitrogen dioxide (NO_2); and the reaction products are oxidized hydrocarbons and ozone (usually referred to as a group of oxidants).

5. The oxidants formed are capable, even at extremely low atmospheric concentrations, of causing irritation to the eyes and mucous membranes of humans and damaging or destroying certain types of growing plants. The aerosols (tiny particles of liquid or solid substance) associated with smog formation are capable of scattering light and destroying visibility.

The role of aerosols in the smog problem, aside from visibility interference, has not been clarified. There is reason to suspect, however, that aerosols may furnish the needed surfaces on which the atmospheric reactions take place and may also serve to absorb the irritating gaseous reaction products so as to intensify their effects on humans.

If this hypothesis concerning aerosols is accepted, it may be seen that smog results from the simultaneous existence in air of four factors, i.e.: Hydrocarbons + NO_2 + Sunlight + Aerosols \rightarrow Smog.

It follows that complete elimination of any one of these necessary factors would eliminate smog. Such complete elimination, however, seems impossible; hydrocarbons are the basis of our liquid and gaseous fuels; nitrogen dioxide is produced in every combustion of fuel as well as by natural reactions in the upper air; elimination of sunlight is unthinkable even were it possible; and production of aerosols is so inextricably linked with human activity and natural phenomena that the earth's atmosphere may be thought of as already contaminated on a worldwide basis.

Increasing the natural ventilation of a metropolitan area by artificial measure does not appear feasible in the near future, nor does it seem practical to envisage moving a major city out of its existing location in a topographic basin.

This, then, is the smog dilemma. The solution seems to lie in modification of the activities of man to reduce the escape of the atmosphere of hydrocarbons, oxides of nitrogen, and aerosols to the lowest achievable level and then to avoid a concentration of such activities as will overload the air supply of any area.

It should be noted that it is an oversimplification to refer to hydrocarbons as a group as though all hydrocarbons are equally effective as the precursors of smog. Research has indicated that unsaturated hydrocarbons of relatively low molecular weight are the ones most easily converted to irritating oxidants.

Effects of Rural Activities On Outdoor Air

Many rural activities have a profound and far-reaching although temporary effect on the quality of outdoor air. Some

activities, such as sawdust burning, have a direct effect while others, such as asparagus cultivation exert an indirect effect by changing the character of the ground surface and making it more vulnerable to winds. Unlike the problems in cities, rural sources of air pollution, with one exception (the testing of nuclear weapons), exert their effects over limited geographical areas so that air quality varies from region to region and reflects the nature of localized agricultural and industrial activities.

The principal rural air pollution problems which have come to public notice in California during the last decade are:

1. Dust storms. 2. Smoke and charred sawdust from sawdust burners. 3. Dust clouds from turkey ranches. 4. Peat dust clouds in the Delta area. 5. Dust from cement plants.

6. Dust, smoke, irritating vapors and odors from hot road mix plants. 7. Odors from faulty disposal of organic industrial wastes. 8. Toxic aerosols from the use of insecticides. 9. Smoke from orchard heating. 10. Fallout from nuclear weapons testing.

Dust storms are not new. They have occurred with increasing frequency and severity in the San Joaquin Valley during recent years apparently as a result of the cultivation of marginal lands.

Smoke and charred sawdust from the conical sawdust burners used in sawmills in the lumbering areas of northern California frequently fill the narrow mountain valleys.

Dust clouds from turkey ranches have proved to be a most troublesome problem in recent years.

Peat dust clouds in the Delta

are peculiar to the area around Stockton. The delta lands, formed by the decomposition of tule rushes into peat which is pure enough to burn, give rise to several peat dust storms. These are associated primarily with the raising of asparagus crops.

Dust from cement plants is a complaint of long standing in California, especially in rural areas of the state. Very expensive equipment is needed to control the dust emission from cement plants.

Hot road mix plants in California are numerous and their location near suitable sources of gravel and sand usually places them in isolated rural spots. The process of classifying and blending the different sizes of rock and sand, and coating the material with hot asphaltic binding compounds produces not only intense dustiness, but also

a variety of obnoxious petroleum vapors.

The treatment and disposal of organic industrial wastes cause widespread air pollution in rural as well as urban areas.

Agricultural insecticides sometimes result in toxic aerosols. Many thousands of tons of toxic chemicals are dispersed into the air each year for the control of insects and other pests, but at the same time exposing many people.

Smoke from orchard heating has been a serious problem in the citrus belt of the state of California.

Fallout from nuclear weapons testing. The testing of nuclear weapons has not only introduced the first instance of an air pollution source that exerts its effects on a worldwide basis but has also introduced an entirely new characteristic to air pollution, that of fallout.



Performance within your air-flow limits measures the true quality of Anaconda Restrictor Tubes

Specified air-flow limits are the sole basis for production of Anaconda Restrictor Tubes. Your first shipment will contain Master Sample Reference Tubes, like those shown in the illustration above. They have the maximum and minimum flow capacities specified.

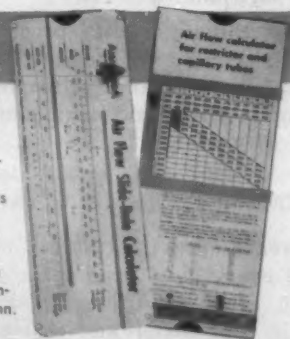
All tubes in the shipment have been tested to meet these limits.

Duplicate Master Reference Samples are retained in our files. This makes certain that every tube in all subsequent shipments will have the air-flow limits you established.

PLUG-DRAWN. All Anaconda Restrictor Tubes are plug-drawn to finish. Unusual care is exercised to produce a smooth, round inside bore. Every length is chamfered at both ends, inside and out. Each tube is thoroughly washed and dried, given a final air-flow test, and bundled, with ends carefully wrapped. You get consistently high quality for easy assembly and consistent performance.

AIR-FLOW CALCULATORS

TWO CALCULATORS AVAILABLE to engineers designing air-conditioning and refrigerating equipment: one for quickly determining air-flow values, and a second for finding corresponding flows from other lengths of tube. Write today on your company letterhead for the free Anaconda calculators shown. Address: French Small Tube Division, The American Brass Company, Box 1031, Waterbury 20, Conn.



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They'll
Do It
Every
Time
by
Jimmy
Hatlo



To All Dealers and Contractors: He Profits Most Who Services Best

ANYONE WHO is in the home equipment business today is keeping bad company. No retailer really can take pride in his occupation—or be proud of competitive bedfellows—as of now.

Why? Bad business practices have been making it malodorous. Witness:

(1) **Profits are unhealthy** at all levels—manufacturers through distributors and branches to wholesalers, contractors and dealers; and

(2) Customers are sick of negligent service.

A healthy man with a healthy family is to be congratulated. But if a polio epidemic strikes a nearby community he is foolish not to inoculate his children with Salk vaccine.

Similarly, *your* business may be comparatively healthy today. But if all around you competitors are sick—and they are—it's time to take stock of a situation which undoubtedly will affect YOU eventually. Failure can be contagious.

How did home equipment merchandising get into this sorry fix? Scads of reasons can be cited. To oversimplify:

Too many dealers and contractors don't provide satisfactory service.

One of the elementary precepts of economics is Gresham's law: "Bad money drives out good." Same principle has been operating in the home equipment field for at least 10 years.

An old-fashioned "good" dealer *sells, SERVICES, and concentrates on one brand.*

A proliferation of schlock operators—who sell everything from transistor radios to toilet facilities (along with an occasional air conditioner and refrigerator) at cut prices on a "supermarket" basis—are driving "good" dealers and contractors out of the business, in too many neo-metropolitan areas.

A wheel-and-dealer performs none of the basic functions (selling, installing, servicing). He is a "hit-and-run" operator.

Furthermore, the real good retail operator—who sells **AND SERVICES** air conditioning, heating, refrigerators, and complete kitchens—is becoming discouraged.

Although that "good" dealer is a vanishing species, he is not vanished or been banished. Thousands of them—practically *all* of whom subscribe to *AC&RN*—still are

doing good jobs, chiefly in non-metropolitan communities. These fellows:

(a) Make good money on their service work (a great deal of which has been defaulted by wheel-and-dealers representing competing makes);

(b) Help carry overhead by refinishing and reselling trade-ins at a profit;

(c) Get continuing repeat business by keeping steady customers happy over a period of years *through dependable service.*

Unfortunately, these "good" dealers and contractors have been neglected by a surprising number of manufacturers during recent years of lush business and negligent business practices.

Subsequently the morale of servicing-selling-dealers who concentrate on one brand drops lower and lower.

Too many either quit the race entirely, or "go discount" themselves. *Then they can't afford service departments.*

Obviously, thereafter, they won't maintain concentrated *brand loyalty.*

As of now, unfortunately, big majority of home equipment trade advertisements take these tired old tacks:

- (1) New product announcements.
- (2) "Our product is the greatest" brags.
- (3) "Look what we're doing for you dealers in consumer advertising."

Right there is another reason why the dealer and contractor situation has deteriorated so worrisomely.

Manufacturers boast that their consumer advertising "pre-sells" their products. So why should a retailer bother about selling or servicing?

Inasmuch as so many manufacturers harp on this story, Mr. Metropolitan Dealer stocks all self-cancelling brands in his help-yourself-but-don't-bother-me store, and *discounts to get action.*

Recommendations to manufacturers:

(1) Expansion of servicing-and-selling dealers, through trade promotion.

(2) **Upgrading of the entire industry** by returning to a policy of exclusive dealers who **SERVICE.** (What have you got to lose? Present mass-merchandising policies are downgrading your business!)

(3) Eventually: return to a loyal, proud, exclusive dealership pattern which will revive the entire home equipment industry—*via GOOD SERVICE.*

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F. M. COCKRELL, Founder

'The Conscience of the Industry'

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JARVIS OFFERS PRESIDENT ANTI-RECESSION PLAN

Recold Corp.
Refrigeration and
Air Conditioning
7250 E. Slauson Ave.
Los Angeles 22, Calif.

Editor:

I have submitted the following anti-recession program to President Dwight D. Eisenhower. It suggests a way for the buying public and businessmen to work together to pull us out of the slump. I hope you can give it some publicity in the News, and that the industry will give it some support.

H. T. JARVIS,
President

(Following is the copy of the letter from Jarvis to President Eisenhower.)

President Dwight D. Eisenhower
The White House
Subject: A Peoples' Plan
versus Political Pump-Priming Ideas

You said at a recent News Conference, "The upturn in our economy will be the result of millions of citizens making their purchases, having greater confidence."

Mr. President, you are most assuredly correct in this observation, but the millions of citizens of whom you speak are afraid of losing their jobs—consequently, they are *not* buying—and the all-too-obvious results are unemployment and recession.

You, Mr. President, can be responsible for ending the present recession in less than ninety days without pump-priming. How? Go before the people and offer a *definite plan* to guide our individual purchases.

Herewith is a plan that will work, it was "depression tested" in 1932. Will you supply the salesmanship to present this plan that will make each one of the millions *realize, individually*, that by *uniting* our combined purchases we will guarantee full employment.

THIS IS THE PLAN

(1) Advertise, in advance, a television and radio talk by you, Mr. President, to present a *positive plan* to immediately end the recession with the help of each citizen.

(2) Ask every family in America, now employed—or who has the money, to immediately make a purchase of something they want.

(3) Ask every business-head in America to authorize the immediate purchase of something that his company can use.

(4) Provide a large U. S. Government placard that each taxpayer can proudly display in their windows, that reads "We have invested in America."

(5) Ask the women of America to immediately organize, appointing one leader in each block who can deliver this plan to her neighbors who may have missed your message.

(6) Provide stamped and addressed cards that each citizen can return to Washington, listing their purchase.

(7) Tabulate the total dollar purchases each week and extend into approximate manhours. Let us know how many jobs were created; also tabulate number who cooperated.

There will be *immediate results* as the public buys.

When the dealer makes a sale, he must replace what he has sold; and the manufacturer must hire people to produce replacements. With this plan each of us will feel that we are a part of the team of free people who *solved* our own problem through your guidance.

This plan is offered, Mr. President, with complete humility and sincerity. In no way do I pose as an economic adviser; on the contrary, I am only a small businessman who has had firsthand experience with a deep depression, having started this business in July of 1932.

H. T. JARVIS,

Air Pollution (2. One Solution)

Research Study in Los Angeles Discloses How Proper Filtering Cuts Irritating Effects of Smog Condition

LOS ANGELES — Activated carbon filters used in air conditioning systems would reduce this city's smog effects "almost to unnoticeable limits" is the conclusion reached by a study sponsored by the state of California.

In evaluating filters for capability of removing irritants from polluted air, researchers Neal A. Richardson and Wilbur C. Middleton initiated a testing program in two rooms of the Pacific Telephone & Telegraph building in downtown Los Angeles. Experiments were performed, they noted under "real conditions."

FILTER'S IMPORTANCE

Importance of filters was one phase of an air conditioning conclave's look into "Designing the Indoor Climate," conducted last fall by the University of California at Los Angeles's department of engineering and engineering extension in cooperation with the Institute of Heating & Air Conditioning Industries.

In view of the multiplicity of air pollution sources and complexity of photochemical reactions occurring in the atmosphere, Richardson and Middleton insist it is unlikely the smog problem will be "solved" on an area-wide basis soon.

They advocate, pending this desirable solution, that it seems reasonable to attempt to control quality of air brought into enclosed living and working spaces. So they conducted their test on filtering media.

Smog in Los Angeles currently is identified with eye, nose, and throat irritation, reduced visibility, and damage to agricultural crops and materials, they are convinced. Agents in polluted air, however, "have not all been identified."

STUDY DIFFERENCES IN SENSORY RESPONSE

The researchers say filter effectiveness cannot be established directly in terms of a change in chemical concentration, but must be measured in terms of the decrease in smog manifestations which attends a filter installation. In their study, differences in sensory response of human subjects to filtered and unfiltered environments were used as a primary measure of that filter effectiveness.

"It should," they said, "be recognized that this method of evaluating filters does not insure removal of carcinogens or other ingredients which may be harmful to health. However," they continue, "it has not been established that current level has detrimental effect on health. When more is known about health aspects, it should be possible to design filtering equipment to remove causative agents."

"The improvement of human comfort and job performance efficiency is felt to be ample justification for use of filters," they emphasize.

They evaluated filter materials primarily in terms of a comparison between the sensory response of subjects working in a filtered atmosphere and the sensory response of subjects

working in a non-filtered one.

One of the two rooms in the Pacific Telephone & Telegraph building tested was located on the seventh floor, the other was immediately above it on the eighth floor. Each had the same floor plan and were remodeled so they were alike.

In each test, the researchers point out, there were approximately 20 young women who served as subjects during the testing. The women in both rooms were clerk-typists with similar levels of responsibility.

Outside air for the test was brought directly into the rooms in a single pass through the window-mounted ventilator-filter units used. Eight room-air changes an hour were provided

for each filter material tested, they said. Smoke tests indicated the ventilator systems increased the pressure in the rooms to a level sufficient to prevent air from flowing into the rooms through the doors when they were opened. Thus, the two testers explain, the air brought into the test rooms was completely controlled.

CONCLUSIONS

Six conclusions reached:

"(1) A statistically significant reduction in sensory irritation is accomplished when Los Angeles smog is passed through activated carbon filters having air detention times at least as short as 0.0030 seconds.

"(2) Although activated car-

bon removes smog irritants some of the irritating materials apparently did penetrate the test filter bed on days of intense smog."

"(3) The differences in effectiveness of activated carbon filters with respect to variations in air detention time between 0.032 seconds and 0.0030 seconds are not statistically significant. However, the ratios between corresponding irritation levels in filtered and non-filtered atmospheres indicate a trend of decreasing effectiveness as air detention time in the filter is reduced.

"(4) Effectiveness of activated carbon in removing oxidants is a function of air detention time. Effectiveness will be improved very little by increasing detention time beyond 0.032 seconds. It falls off at an increasing rate as detention time is decreased.

"(5) Removal of airborne particles down to a diameter less

than 0.05 microns does not significantly decrease sensory irritation resulting from Los Angeles smog. These results, together with the correlation data, show that 'particulate' material is not directly related to the occurrence of sensory irritations.

"(6) Correlations computed from daily measurements obtained in a non-filtered atmosphere at 11 a.m. indicate that sensory irritation is highly related to oxidant level and moderately related to temperature. A slight negative correlation has been computed between irritation and particulate count are not different from zero."

*Note: The most demanding requirements of a filter system, designed to remove the irritants from areawide pollution, is the purification of air which is drawn entirely from outside the building. A considerable amount of experience has been gained, however, in the use of activated carbon for the purification of recirculated air. This procedure reduces the amount of outside air which must be filtered, and also reduces the air conditioning load in buildings where it is used."

HY FARBER DESIGN

*AM-pak... Perfect Package for Air Moving Units

For evaporative condensers, air handling units and heavier heating equipment,

Utility has created AM-pak, an entirely new design priced for high production, combining efficiency with flexibility, strength with perfect dynamic balance. Ranging in diameters from 10 to 36 inches, the rugged blower wheel has 64 specially curved blades, features a conical center disc construction and operates at static pressures up to 6" W.G. You deliver greater air-power with less horse-power when your equipment is built with AM-pak.

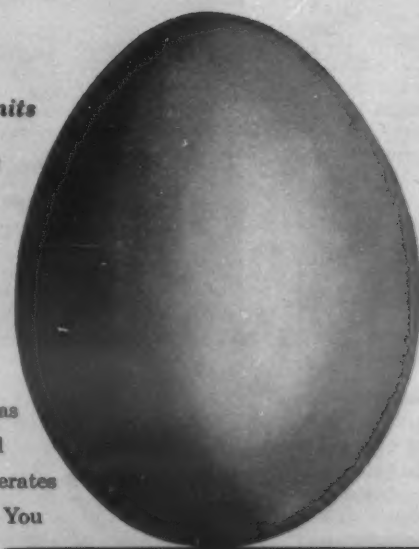
Scroll shapes and wheel diameters can be matched to your exact needs. Let us send you complete data.



UTILITY FAN CORPORATION

911 East 59th Street, Los Angeles 1. International Division, 141 El Camino Drive, Beverly Hills, California. A division of Utility Appliance Corp.

*Air Moving Package.



Firms Whose Products Will Be Shown At Western Air Conditioning, Heating, Ventilating & Refrigeration Exhibit

Aeroquip Corp. 112
Air Conditioning &
Refrigeration News 105
Air Conditioning Supply Co. 101-202
Air Distribution Products 214-A
Air Equipment Sales Co. 405-407
Air Factors, Inc. 309
Air Filter Corp. 211-B
Air & Refrigeration Corp.
Ajax Boiler & Heater Co. 408
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Barry Blower Co. 311
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Bryan Steam Corp. 304
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Drayer-Hanson 101-202
Dryomatic Corp. 405-407
Dunham-Bush, Inc. 216-B-218-220
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Electro Air Cleaner Co., Inc. 211-A
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Fabling Industrial Supply Co. 207
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Heat-X, Inc. 216-B-218-220
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Western Show--

(Concluded from Page 1)

continued, "is the fact that this area is also, because of climatic conditions, the greatest possible market in this country for air conditioning and related equipment."

A regional show offers those industry people who are remote from the centrally located centers in which national shows are held, the opportunity to attend such an event, relates Fred J. Tabery, who manages some of the top industry shows put on in the U. S., and who is manager of the Western Show. He says that statistics on at-

tendance show that under 12% of those attending such industry affairs come from distances greater than 1,000 miles.

Tabery also said that figures developed by his office show that a salesman can reach as many good prospects in a five-day trade show as he can contact in the field in approximately six months.

Included in the comprehensive technical sessions at the WACIA conference is a general session Wednesday night, May 7, chairmanned by William B. Tennity, Tennity & Co., Los Angeles, association president. Subjects include "Large Absorption Systems for Air Conditioning," "Results of Some Studies

you get

MORE FOR YOUR MONEY MORE TO CHOOSE FROM

with

McQuay REFRIGERATION PRODUCTS

WHEN YOU USE McQuay refrigeration products you not only get the finest, but you get more for your money. And, because the McQuay line is the most complete in the industry, you have more models and sizes to choose from—a product specifically designed for your every need. Capitalize on McQuay experience and know-how. See your McQuay wholesaler, or write McQuay, Inc., 1607 Broadway St. N. E., Minneapolis 13, Minnesota.



LOW TEMPERATURE
PRODUCT FREEZER

CEILING MOUNTED ZEROPAK
The low temperature storage cooler for limited floor space applications. Made in wide range of sizes.

ZEROPAK SPEED TUNNEL FREEZER—Combination sharp freezer and low temperature storage cooler. Available in four models to balance with 1½, 2, 3 and 5 H.P. low temperature condensing units.

HIGH TEMPERATURE
PRODUCT COOLERS

CEILING MOUNTED PRODUCT
COOLER—Six models for cold storage applications.

FLOOR MOUNTED
PRODUCT COOLERS—Nine models to fit any medium or large capacity product cooling.



ZERO FROST SYSTEM

The McQuay Zero Frost is the ideal automatic hot gas defrost system, and is priced right. Designed specifically for low temperature applications, it is frost free, can free and extremely simple both in operation and installation. The McQuay ReVap, a low wattage contact heated re-evaporator, func-

tions as a heat reservoir to re-evaporate the condensed liquid formed during defrosting. The solenoid valve, actuated by the timer, diverts hot gas from the compressor discharge into the evaporator and then through the ReVap. The Zero Frost is available in eight sizes.



McQuay ZERO FROST SYSTEM

McQuay
Means Quality

on Air Pollution," and "Low and High Temperature Environment Chambers."

Thursday afternoon, May 8, Frank M. Neal, Minneapolis-Honeywell Regulator Co. will moderate a symposium on "School House Environmental Control." Individual subjects to be covered are "Steam and Hot Water Systems," "Radiant Heating Systems," "Heating, Ventilating, and Cooling Systems," "Central Air Systems," "Unitized Direct-Fired Systems," and "As the Architect Sees It."

A symposium on "Air Cleaning with Reference to Particle Size, Filter Testing, and Smog Control," will be held Thursday evening with Norman Sharpe,

professor at California Polytechnic college, as its moderator.

Leo Hungerford, Utility Appliance Corp. will head up a symposium on "Air Conditioning Existing Buildings" Friday, May 9. Covered will be "The Owners' Problems," "The Mechanical Engineers' Problems," "The Structural Engineers' Problems," "The Contractors' Problems," and "The Architects' Problems."

David Reznick, Air Fan Engineering Co. will chairman a general technical session Friday evening, subjects including "High Temperature Hot Water Systems," "Water Conservation," "Air Conditioning Exist-

ing Residences," and "Residential Heat Pumps."

Final sessions Saturday morning, May 10, will include current panel discussions on "Market Refrigeration" and "Codes and Standards." Peter H. Askew, Thermal Products, Inc. will moderate the first, Herbert B. Nottage, Lockheed Aircraft, Inc. the second.

Conference Program

Detailed conference program is:

WEDNESDAY, MAY 7

7:30 p.m.—General technical session, William P. Tennity, chairman. "Large Absorption Systems for Air Conditioning" by Robert H. Phillips, Carrier Corp.; "Results of Some Studies on Air Pollution" by Dr. Alexander Goetz, California Institute of Technology;

"Low and High Temperature Environment Chambers" by Stuart Giles, Bemco, Inc.

THURSDAY, MAY 8

2 p.m.—"School House Environmental Control" symposium Frank M. Neal, moderator. "Steam and Hot Water Systems" by C. D. Walz, Los Angeles consulting engineer; "Radiant Heating Systems" by Alvin L. Ottum, Year-Round Comfort, Inc., Los Angeles; "Heating, Ventilating, and Cooling Systems" by Russell C. Taylor, American Air Filter, Inc.; "Central Air Systems" by Wallace L. Donley, Los Angeles consulting engineer; "Unitized Direct-Fired Systems," speaker to be announced; "As the Architect Sees It" by Arthur Rendon, Kistner, Wright & Wright, Los Angeles.

7:30 p.m.—"Air Cleaning with Reference to Particle Size, Filter Testing, and Smog Control" symposium, Prof. Norman Sharpe, moderator. Panel includes Sydney F. Duncan, Farr Co., H. L. Barnebey, Barnebey-Cheney Co., J. S. Earhart, Preferred Equipment,

Inc., James W. May, American Air Filter, Inc., and Paul W. Aitkenhead, Electro-Air Cleaner Co., Inc.

FRIDAY, MAY 9

2 p.m.—"Air Conditioning Existing Buildings" symposium, Leo Hungerford, moderator. "The Owners' Problems" by John Williams, R. A. Rowan & Co.; "The Mechanical Engineers' Problems" by Cary B. Gamble, New Orleans consulting engineer; "The Structural Engineers' Problems," speaker to be announced; "The Contractors' Problems" by Henry Ulovec, Mehring & Hanson Co., Los Angeles; "The Architects' Problems," speaker to be announced.

7:30 p.m.—General technical session, David Reznick, chairman. "High Temperature Hot Water Systems" by Arthur J. Hess, Hess, Greiner & Poland, Heat & Power Equipment Co., Los Angeles; "Water Conservation" by Ralph Westcott, Pasadena, Calif. consulting engineer; "Air Conditioning Existing Residences" by George Frymeyer, Carrier Corp.; "Residential Heat Pumps" by James Kercheval, General Air Conditioning Corp.

SATURDAY, MAY 10

9:30 a.m.—"Market Refrigeration" panel discussion with Peter H. Askew moderating a panel of four. (Concurrently) "Codes and Standards" panel discussion with Herbert B. Nottage moderating a panel of five.

Houston Law--

(Concluded from Page 1)

all firms doing business as an air conditioning and/or heating contractor would be required to have one man in its employ hold either a Class A (unlimited) or Class B (limited to equipment under 25 tons) license.

Applicant for a license must be of legal age, and have three years' practical experience in air conditioning contracting. A degree or diploma as air conditioning or mechanical engineer from an accredited school would be the equivalent of two years' practical experience.

Then he must pass an examination by a licensing board set up by the ordinance.

In addition to paying a \$100 fee for the license, he is required to carry workman's compensation on each of his employees, \$50,000 public liability insurance, and \$25,000 property damage insurance.

"Main purpose of the ordinance," Sexton said, "is to protect the health and welfare of the citizens of the city by eliminating 'fly-by-night' contractors, who, heretofore, have gone into business and installed systems which in some instances were dangerous."

Due to faulty work of substandard contractors, he said, "we have a record of one man dying and many people being overcome or made sick because of improper installations."

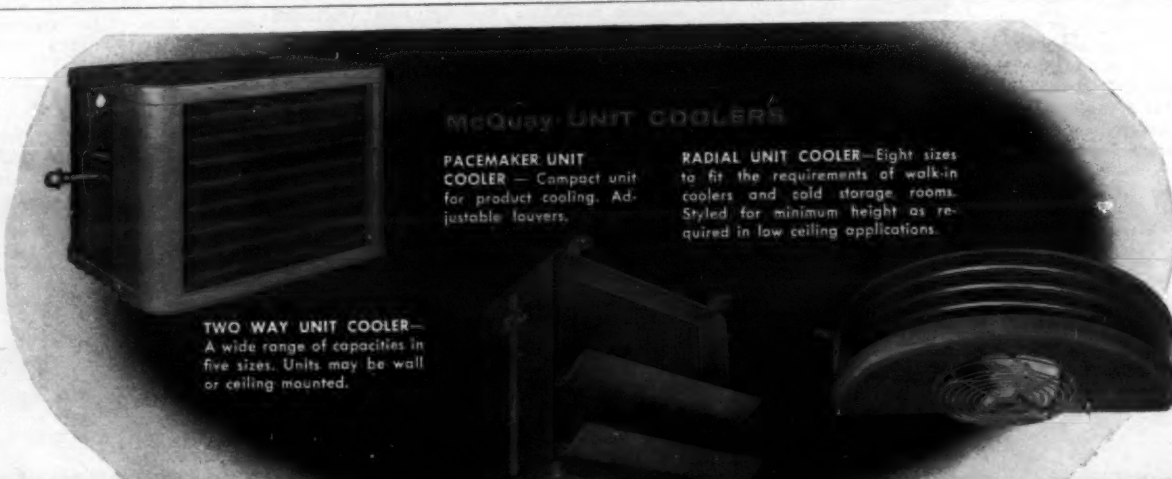
Nunlist Named--

(Concluded from Page 1)

dent of sales for the L. J. Mueller Furnace Co. of Milwaukee, which became a division of Worthington in that year. He has been with the Mueller organization since 1941, and since August 1956, has been executive vice president of the division.

In his new position Nunlist will be responsible for coordinating Worthington's activities in the field of heating and cooling equipment. In addition to its manufacturing operations in Milwaukee, the Mueller Climatrol Div. operates plant facilities at Alhambra, Calif. The Air Conditioning & Refrigeration Div. has plant facilities at East Orange, N. J., Holyoke, Mass., and Decatur, Ala.

Nunlist will be located at Worthington's headquarters in Harrison.



McQuay UNIT COOLERS

PACEMAKER UNIT COOLER—Compact unit for product cooling. Adjustable louvers.

RADIAL UNIT COOLER—Eight sizes to fit the requirements of walk-in coolers and cold storage rooms. Styled for minimum height as required in low ceiling applications.

TWO WAY UNIT COOLER—A wide range of capacities in five sizes. Units may be wall or ceiling mounted.

AIR COOLED CONDENSERS



MODEL "AD" AIRCON—2, 3 and 5 ton remote type air cooled condensers with direct driven propeller fans.



MODEL "AR" AIRCON—Remote type residential condensers using centrifugal blowers. Available in 2, 3, 5 and 7½ ton nominal capacities.

MODEL "AB" AIRCON—Remote, water-cooled condensers available in eight sizes—9, 11, 15, 20, 25, 30, 40 and 50 ton nominal capacities.



the NEW SPACE MISER

Another FIRST by

McQuay



Three high temperature models for reach-in refrigerators. Minimum space attractive grained aluminum cabinets, ease of installation are featured. Three low temperature models for reach-in freezers are fabricated from grained aluminum and equipped with built-in heat exchangers. Designed for economical hot gas defrosting with de-icer coil bonded to concealed drain pan.

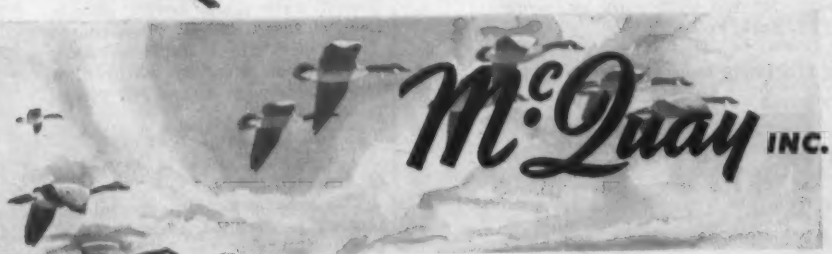
RESIDENTIAL EVAPORATORS



VERTICAL AIR FLOW—Available in 2, 3, 4, 5 and 7½ ton nominal capacities. Designed to mount above or below warm air furnaces.



HORIZONTAL AIR FLOW—Available in 2, 3, 4, 5 and 7½ ton nominal capacities. Designed to mount in horizontal duct work.



AIR CONDITIONING
HEATING
REFRIGERATION

FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE

Write Directly to the Company—at the Address Given in the News Item



Portable Test Chamber Moves on Fork Lift

Portable chambers which facilitate controlled temperature environmental testing with vibration machines has been developed by Tenney Engineering, Inc., Dept.

AC&RN, Union, N. J.

Available in any work-space size up to 5 by 5 by 5 ft., the chambers can be moved by a permanently attached fork lift especially designed for this application. Lifts are either electrically or manually controlled and can be adjusted to heights to fit up to a 2,500-lb. force vibrator.

Motor Cooled by Own Heat Exchanger

Introduction of a line of totally-enclosed motors with self-contained heat exchanger cooling for operation in highly contaminated atmospheres has been announced by Allis-Chalmers Mfg. Co., Dept. AC&RN, Milwaukee 1.

Available in constant or adjustable speeds in frame sizes of EB-120 and up and in ratings from 10 through 200 hp., these motors are designed for many applications and use in locations having airborne foreign matter.



Introduces 'Premier Merchandiser' to Line

"Premier Merchandiser," newest in its line of ice cream and frozen food cabinets, has been introduced by Weber Showcase & Fixture Co., Inc., Dept. AC&RN, 5700 Avalon Blvd., Los Angeles 11.

Premier Merchandiser operates with the "Rotalock" system of cold air control. In addition, the unit has all-side shopping at 37½ in. height.

Cabinet's front panel is hinged

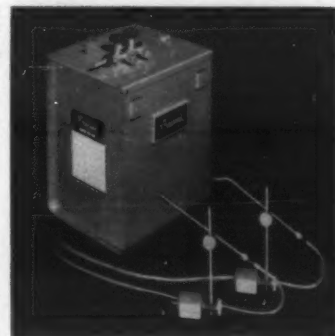
to provide access to the compressor compartment and the defrost heater access panel. The 1-hp. semi-hermetic condensing unit assembly, dissipator pan, and pressure control unit are mounted on a pull-out slide for further accessibility.

'Vapor-Lub' Reduces Work Temperature

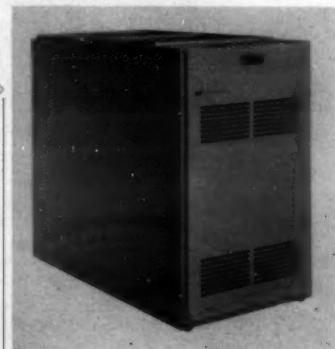
A new type of cooling system for all machining, tapping, drilling, grinding, and metal drawing has been introduced by Precise Products Corp., Dept. AC&RN, Racine, Wis.

This new cooling method called "Vapor-Lub," reduces temperatures of the entire work area by refrigeration and is claimed to minimize cutting tool frictional heat with a special lubricating concentrate atomized under pressure and deposited on the tool and work surface.

The refrigerating operation, which is accomplished by the sudden expansion of compressed



air through a precision nozzle, absorbs heat from the surrounding work area and reduces temperature of the cutting surface up to 20° below ambient. A jet-type nozzle permits accurate positioning of the lubricating and refrigerating stream for maximum efficiency, the company further explained.



Adds 3 Gas-Fired Furnaces to Line

Three gas-fired furnaces with input ratings of 105,000, 135,000, and 165,000 B.t.u.h. make up the new "Low-Boy" line of Coleman Co., Inc., Dept. AC&RN, 250 N. St. Francis, Wichita, Kan.

All models are built along low compact lines to facilitate installation in basements with low ceilings and other areas with less than average clearance. Over-all height (not including plenum) is 42½ in.

All models have belt-driven blowers which permit a wide range of air adjustment. Furnaces can be used with all types of duct systems including the manufacturer's prefabricated 3½-in. tube and blender system; 4, 5, and 6-in. round pipe perimeter systems, and conventional rectangular ducts, the company said.



Flexible Ducting Needs No Elbows

A new flexible ducting for air conditioning systems has been announced by Flexible Tubing Corp., Dept. AC&RN, Guilford, Conn.

"Thermaxflex ST" consists of a continuous, uninterrupted, vinyl-coated fiber glass cover, permanently fused to a vinyl-coated spring steel wire helix. The maker recommends it for use with either high or low pressure air conditioning systems.

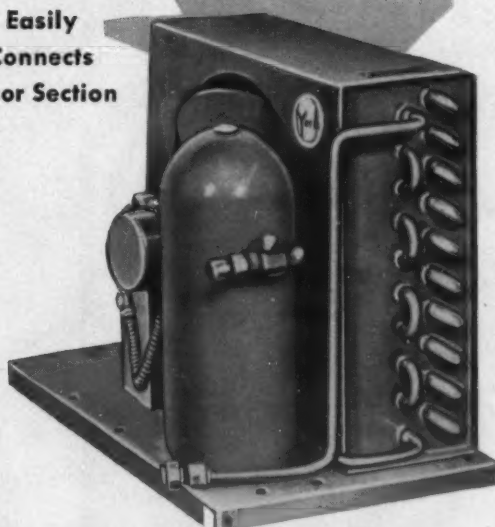
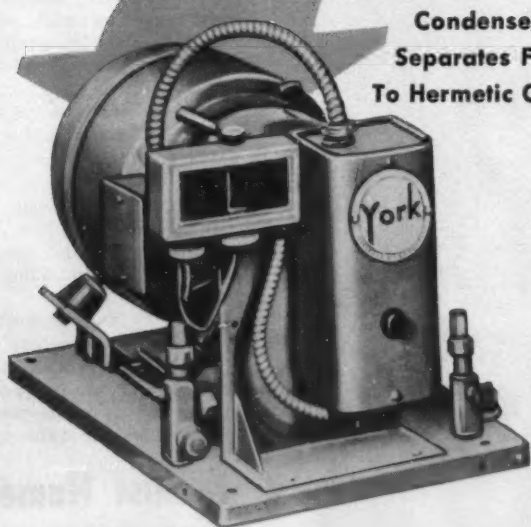
It can be installed without special tools, and requires no elbows or special fittings.

The company calls special attention to claimed advantages of the flexibility of the new ducting.

Exclusive YORK FLEX-O-METIC CONDENSING UNITS

COME IN 2 SECTIONS

Condenser Section Easily Separates From or Connects To Hermetic Compressor Section



SEPARATE SECTIONS SPELL OUT ALL THESE MONEY-SAVING BENEFITS FOR INSTALLING CONTRACTORS:

More flexibility! Compressor and condenser sections for varying models can be interchanged. So, your York Wholesaler will have the unit you need instantly available!

"Remote" installations now practical! Condenser section may be installed remotely from compressor section. Sections separate and/or connect easily...in minutes!

Installations are simpler! Compressor section is completely factory wired. Multiple compressor sections can be installed on racks with a single dry surface condenser circuited for each application to meet special needs. Rotalock Valve rotates 360° for easy piping...3 service valves, 2 with gauge ports, let you take high pressure readings at both compressor and receiver...low pressure reading at compressor.

Tri-Cooling—A York Exclusive available on all Very Low Temperature air-cooled or water-cooled units for applications as low as -50° F.



Complete line of York Flex-O-Metic Condensing Units in air-cooled, water-cooled and air-water-cooled models with sizes ranging from 1/3 to 7½ HP. Contact your York Wholesaler for full particulars, or, write York Corp., Box 1272, York, Pa.

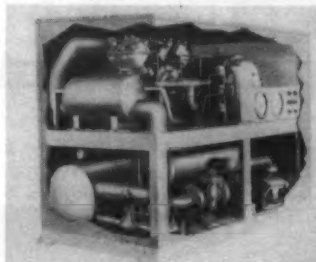
Your FUTURE and FORTUNE Now Lies With York!

YORK

York Corporation, York, Pa.
Subsidiary of Borg-Warner Corporation



Develops 2 Packaged Liquid Chillers



Two new packaged liquid coolers have been added by Bell & Gossett Co., Dept. AC&RN, 8200 N. Austin

Ave., Morton Grove, Ill.

Units are 60 and 75 ton. They expand the PLC line to 10 separate units so that sizes now range from 7½ to 75 tons.

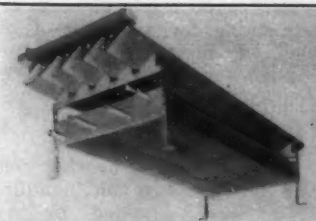
Only outside wiring and outside plumbing are needed during installation of units. All electrical controls are furnished and wiring is complete with a fully protected interlocking control system. The chiller pump and the tower pump are included and sized to customer's specifications. All inside plumbing is finished and ready for outside connection.

Adds Gas-Fired Blower-Type Unit Heater



Latest addition to Modine's line of gas-fired equipment is the new "Series GB" blower-type unit heater. Designed for suspended installation in the room to be heated or in an adjacent room, these units may be installed with or without ductwork. They are made by Modine Mfg. Co., Dept. AC&RN, 1500 DeKoven Ave., Racine, Wis.

Available in seven sizes, ranging from 50,000 to 310,000 B.t.u.h., these units are completely assembled at the factory, and shipped to the job ready for installing.



Baffle Cooler Coils Offered

A new series of baffle cooler coils has been introduced by Larkin Coils, Inc., Dept. AC&RN, Atlanta.

Delivered as a complete unit, the baffle cooler coil consists of an aluminum cross-fin coil, double-louvered baffle with drain pan, and hangers.

Baffles are constructed of heavy-gauge, polished aluminum, are easily removed for cleaning, and may be raised or lowered to suit the installation.

Baseboard Heating Panels Announced

New accessories for the line of "Radiantrim" baseboard heating panels have been announced by the Plumbing & Heating Div., American-Standard, Dept. ACRN, 40 W. 40th St., New York City 18.

Among them are: screw-on end boxes, corner and valve enclosures which can be removed entirely without damaging wall plaster; new extension panel with rounded apertures styled to match the cast iron heating panels; legs which can be adjusted at any time to allow for irregular floor levels; a cast iron retaining block to hold the heavy cast iron panels securely in place. The blocks are screwed to the wall studs through apertures along the top of the heating panels.

Need Not Balance Velocity Indicator

A pocket-size instrument, the "Floret Air Velocity Indicator," is designed for checking air conditioning, cooling, and refrigerating installations. It requires no balancing and, when held against the air discharge opening, instantly indicates air velocity in f.p.m., according to

manufacturer Bacharach Industrial Instrument Co., Dept. ACRN, 200 North Braddock Ave., Pittsburgh 8.

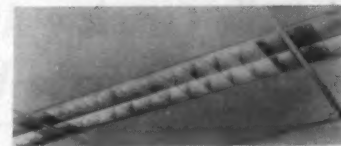
The Floret operates on the deflecting vane principle. Pressure exerted by a stream of air flowing through the instrument's case causes movement of the vane which is transmitted to a pointer whose full scale deflection represents air velocity of approximately 1,000 f.p.m., the company explains.



Integrates Air Diffuser, Fluorescent Light

A new integration of air diffusion and fluorescent illumination into one functional architectural element has been announced by the Air Distribution Div., Barber-Colman Co., Dept. AC&RN, Rockford, Ill. and Day-Brite Lighting, Inc., 16 N. Ninth St., St. Louis.

Developed jointly by the two companies, this unit called the "Paraflo" troffer can be readily installed in any suspended ceiling to provide high comfort light and air conditioning.

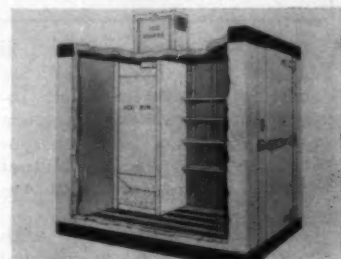


Conditioned air is quietly and evenly diffused throughout the length of a center parabolic louver of perforated metal. The total free area of perforations provide low pressure drop and a correspondingly low noise level.

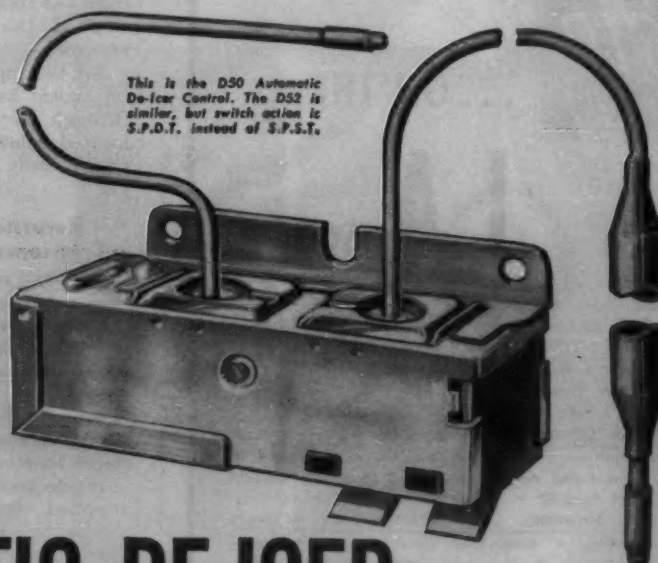
Walk-In Can Support Ice Machine on Top

A walk-in cooler that is claimed capable of supporting an ice machine on top and is equipped with an ice storage bin has just been released by C. Schmidt Co., Dept. AC&RN, 1712 John St., Cincinnati 14.

A bin using 5 sq. ft. of floor space will hold 750 lbs. of flaked ice. The bin is constructed with a baffle over the opening to prevent ice from spilling out.



Ranco D50 and D52 AUTOMATIC DE-ICER CONTROLS



This is the D50 Automatic De-Icer Control. The D52 is similar, but switch action is S.P.D.T. instead of S.P.S.T.

Production Now Available On Normal Lead Time

Here are revolutionary new controls developed by Ranco research to make reliable, completely automatic heat pump operation an actuality in a much wider geographic area than ever before. Efficiently simple, D50 and D52 Automatic De-Icer Controls are the only controls which detect the coil ice to be removed quickly and automatically. They operate on the increase of temperature differential between ambient outside air and the outside iced coil as compared to a clear coil. "Spread temperature" for initiation of the de-icing cycle is adjustable on the D50 and both the D50 and D52 automatically terminate the de-icing cycle after ice is removed from the coil.

Two capillary tubes permit mounting the control in a weather-protected compartment with one tube extending into the air stream and the other with bulb for attachment to an end bend at the middle of the coil. Ambient air power element action is not effective in ambient temperatures above 48°F after de-icing, permitting operation of the fan through the de-icer circuit in the cooling phase.

Contact Ranco about this sensational De-Icer Control, and ask about the new slide-type reversing valves and automatic cycling control designed to work with the automatic de-icer to give absolutely automatic heat pump operation.

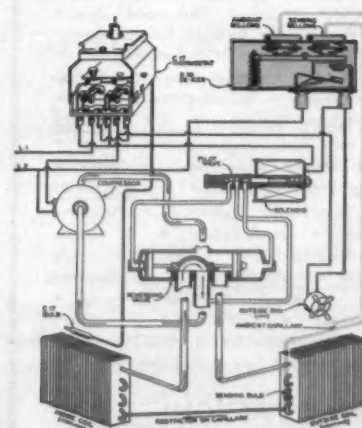


Diagram above shows de-icing phase of heat pump (Ranco D50 Automatic De-Icer in blue). In 3-5 minutes, the coil clears of ice, the de-icing cycle is terminated, fan motor starts and solenoid valve is re-energized to return unit to heating phase . . . all automatically!



Ranco
INCORPORATED

World's Largest Manufacturer of Refrigeration Controls COLUMBUS 1, OHIO

Commercial Air Conditioning

Believed To Be Largest In Existing Bldg.

Installs Complete Air Conditioning—Including Smog Control—In Large West Coast Bldg. To Cool 1,000 Zones

The Job: Pacific Mutual Building, Los Angeles.

The Goal: Complete cooling, including smog control, in existing building.

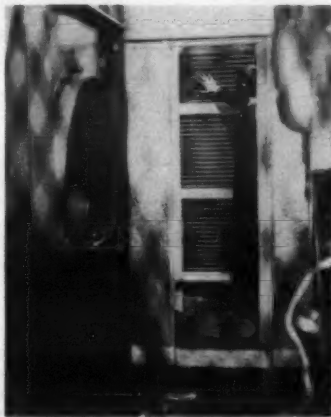
Equipment Used: Two 600-ton Trane water chillers, Marley cooling towers, Barber-Colman air blending cabinets, four 60-hp., one 75-hp. Chicago high pressure fans, 25 Drayer-Hanson fan and coil units.

Prime Contractor: Climate Conditioning Co., Los Angeles.

LOS ANGELES — What is into nearly 1,000 individual believed to be the largest air zones of thermostatic control. conditioning system ever installed in an existing structure in the West has been incorporated in the Pacific Mutual building in downtown Los Angeles.

The 12-story structure with six-story addition is divided into nearly 1,000 individual zones of thermostatic control. Four built-up systems are installed on the roof in what are believed to be the largest housings ever fabricated. Each sheet metal housing is 16 ft. high, 12 ft. wide, 37 ft. long.

Four 60-hp. Chicago high pressure fans, located in the



IN EACH mixing system are Chicago high pressure fans and Drayer-Hanson cooling-heating coils.

roof housing, supply air through high velocity warm and cold air ducts. The latter drop down from the roof around the perimeter of the building between windows.

Air is supplied into the rooms for both heating and cooling through air blending cabinets located below the windows, specially made by Barber-Colman Co.

Air Returned via Transoms to Halls

Air is returned from the rooms through transoms into the corridors, thereby effectively eliminating smoke from the rooms and ventilating the corridors.

Air in the corridors is returned to the fans by return air risers located near each fan.

Inside rooms are individually supplied from the perimeter ducts by means of Barber-Colman air blending cabinets located at the ceiling.

The refrigeration plant consisting of two 600-ton Trane centrifugal water chilling units, together with Marley redwood cooling towers is located on the roof adjacent to the supply fans.

The compressors are protected from the elements by a roofed-in enclosure. All exposed metal and piping is triple painted to withstand corrosion.

Inside each of the metal housings are the blowers and Drayer-Hanson cooling-heating coils. Each mixing system produces 46,000 c.f.m. at 7 in. static pressure.

In the cold plenum are four extended surface coils 24 by 120 in. and eight rows deep. In the warm air plenum are one 36 by 120-in. two-row coil, and one 36 by 120-in. one-row coil.

Chilled water at 50° F. passes through the cooling coils while steam at 120° F., piped up from three 250-hp. steam boilers in the basement, pass through the heating coils.

Air Passes Through Activated Carbon

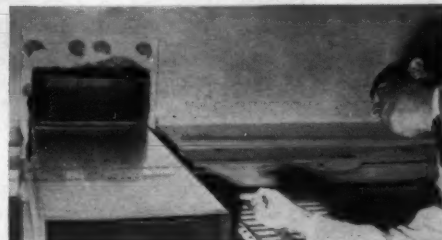
Air, before passing over the coils, moves through three-layer dust filters and then through activated carbon filters to remove condensable gases and smog. Filters were supplied by Burke & Co.

The six-story building, adjacent to the 12-story structure, is supplied by a 75-hp. Chicago



ATOP building, l. to r., covered enclosure shows position of compressors, Marley tower, and housed fan-coil area.

FOUR SHEET METAL housings built up on the roof of the Pacific Mutual building are claimed to be the largest ever fabricated.



HIGH velocity cold and warm ducts drop down from roof around perimeter between windows.

AIR blending cabinets located below the windows supply heating and cooling to rooms.



high pressure fan connected to the central chilled water and steam systems.

It uses two 36 by 90-in. two-row steam coils and two 36 by 90-in. single-row steam coils for heating.

In addition to the high pressure systems, the building has 25 conventional Drayer-Hanson fan and coil units also connected to the central chilled water and steam plants.

Conditioned Air Recirculates 8 Times an Hour

Conditioned air is recirculated through the entire building eight times per hour. The duct risers, finished to match the walls of the rooms they pass through, average 20 in. wide and 16 in. deep. They become smaller on lower floors to maintain equal air pressure.

In the 12-story building, the blender boxes run the full width of each window and are 9 in. deep. Because window spacing in the six-story building is not uniform, special blender boxes are used under selected win-

dows. They are 36 in. wide 12 in. deep, and 26 in. high.

Grilles on each blender are adjustable for direction of air flow. Pneumatic temperature control system furnished by Johnson Service Co. provides constant volume control at every blender box.

All cooling and heating coils and low pressure air handling units were supplied by Air Conditioning Supply Co. here. Lee Sandahl was sales-application engineer on the job.

J. L. Hengstler, consulting engineer, designed the system.

He chose this type of system because it was less costly than one carrying chilled water to the air conditioned spaces or using packaged units.

Packaged units were considered too noisy for this type application and floor space for them was not available. A direct chilled water system held no provision for cooling spaces remote from windows.

The high pressure system kept duct sizes small where space was limited.



...ON THE
L.A. SCENE:

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SEE THEM IN ACTION!

RECENT JOBS SOLD BY LOCAL SALES AGENT:

**AIR CONDITIONING
SUPPLY COMPANY**

137 S. Anderson St., LA 21

drayer-hanson

3301 Medford St., Los Angeles 63, Calif.

(Division of National-U.S. Radiator Corp.) Angelus 9-0321

BOOTHS #101 and #202 AT THE SHOW!

GOVERNMENT SURPLUS

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- 2—G.E.—Freon Condensing Unit, 40 HP, Type CM124H Cat. #19CM124H382A, Ser. #11-088-836.
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- 1—G.E. Freon 12 Condensing Unit—20 HP, Type CM103K302 Model 190M103K320B.
- 3—G.E. Freon, 30 HP, G.E. Condensing Unit. Type CM-124-J Model CM1245-104F.
- 1—Westinghouse Condensing Unit, 25 HP, Type RW-705 Ser. #42N344.
- 1—Worthington Freon Compressor 25 HP, Ser. No. BU10250 Model #4H-F4-100.

For Complete Information Contact:

G & R MACHINERY & EQUIPMENT CO.

20 Superior Street, Buffalo 4, N. Y. TEL. Cleveland 5780.

Air Conditioning

Whirlpool Talks To Prospects In Illustrated Sales Piece

CHICAGO — An illustrated sales talk to prospects is the unique direct mail piece offered to appliance dealers by the air conditioning division of Whirlpool Corp. this year, the company announced.

'PHONOVIEWER'

The device used to promote the sale of "RCA Whirlpool" air conditioners is called "Phonoviewer," created by Close & Patenaude, a Philadelphia sales promotion agency. It consists of a record and a jacket to hold the record. Mounted on the jacket is a wheel which permits the prospect to dial 10 different pictures (on a simulated television screen) tying in with the narration on the record.

Whirlpool uses TV personality George Gobel for its voice and of course makes liberal use of his picture and a number of "Gobelisms" on the jacket and record. The record is 45 r.p.m., one side, and runs for three and a half minutes. Gobel invites listeners to visit the RCA Whirlpool dealer, whose name is on the jacket.

DESIGNATES AREA

Whirlpool also believes that one of the optional methods of distribution of the Gobel Phonoviewer is unique. The dealer can designate an area he wishes covered and distribution by special crews will be made to every third house in the area.

"This serves the double purpose of indicating that a form of selection has been used in delivering the Phonoviewers (the 'you've been chosen' technique) and adds the possibility of pass-on use," the announcement said. "Whirlpool believes the record and viewer message

To Emphasize Heat Transfer In Mechanical Engineering Course at San Jose State

SAN JOSE, Calif.—A complete four-year undergraduate course in mechanical engineering leading to a bachelor's degree will begin this fall at San Jose State college.

Oldest higher education institution in California, San Jose State now has an enrolment of 12,000 which includes 1,200 engineering division students. The legislature has provided \$7,500,000 for a 3-story addition to the present engineering building which has well equipped laboratories including a mechanical engineering lab.

The new mechanical engineering course is a development from the general engineering course.

Emphasis will be given heat transfer for all students in his department, Prof. S. Brooks Walton, head of mechanical engineering, said.

"Heat transfer is of major importance in mechanical engineering, and becoming more so every day," Walton declared.

Walton emphasizes refrigeration, air conditioning, and heating phases, has his students tear down a complete refrigeration unit, put it back together so it will perform properly.

and treatment is unusual enough that neighbors who don't get one will wish to borrow the record."

The regular Whirlpool musical theme incorporated in many of its TV commercials is used on the Phonoviewer as an introduction.

Early dealer orders of the Phonoviewer have been encouraging to Whirlpool and its air conditioning general manager, J. B. Ogden. "It looks now," he said, "like we'll have at least a million of these air conditioning messages in consumer's hands by June. We're convinced they'll deliver a lot of store traffic to participating dealers' stores."

Barnebey Gets Exclusive Rights To Make, Sell Carbon Wool; May Use In Filters

COLUMBUS, Ohio — Barnebey-Cheney here, producer of gas adsorbent carbon, announced the purchase of the exclusive rights to manufacture and sell carbon wool.

Carbon wool is a new form of carbon which is expected to have countless commercial and military applications based on its unusual physical and chemical properties, the company said. It was invented by William F. Abbott of Ojai, Calif.

"Imagine," the announcement said, "having one product in fibrous form that has great physical strength, is non-dusting, has a low ash content, controllable fiber diameter, color absorption, sound absorption, chemical inertness, chemi-

cal reactivity, can adsorb molecules (activated form), is resistant to high temperature, and conductive to electricity. That's carbon wool."

Prior to the Barnebey-Cheney purchase, carbon wool had more or less been confined to the development stage but officials here plan to perfect as soon as possible its many and varied uses. Actually even Barnebey-Cheney doesn't know all of carbon wool's possibilities "because a product with such a physical make-up has never been available before."

It is expected that carbon wool will be used first in air filters for odor removal in furnaces and air conditioners, and in the industrial gas mask car-

tridge, according to Barnebey-Cheney.

Another likely use cited is insulating material in buildings and protective shelters so that pure air could come through but toxic gas would be held out.

Robertshaw-Fulton

Transfers Heating Controls to Acro Div.

LONG BEACH, Calif. — Robertshaw-Fulton Controls Co. has announced the transfer of the heating controls section of its Acro Div. at Columbus, Ohio, to its Grayson Controls Div. at Long Beach.

Former Acro Div. products included fan and limit controls, thermostats, and gas valves. These are now manufactured at the Grayson Controls Div. Robertshaw-Fulton's precision snap-acting switch line will continue to be produced at the Acro Div.

For safer, easier equipment cleaning ...



• Cleaning compounds based on Du Pont sulfamic acid are handled dry, until they are dissolved for use.

DRY

ACID CLEANERS

based on Du Pont sulfamic acid

New cleaning compounds made with sulfamic acid are sold and handled dry—no hazardous liquids to ship or store. Dry, or dissolved in water for use, they create no fumes. Yet these cleaners have all the penetrating power of hydrochloric acid with far less corrosive effect.

Sulfamic acid-based cleaners remove scale and deposits from air-conditioning and ice-making equipment, food-processing vessels, steam boilers, milk evaporators and pasteurizers, marine evaporators and heat exchangers. Cleaning action is fast, thorough.

We'll gladly send you more information on sulfamic acid-based cleaners and the names of formulators who offer these new compounds. Just mail the coupon below.



DU PONT
SULFAMIC ACID



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)

Grasselli Chemicals Dept., N2533, Wilmington 98, Del.

Please send me: ☐ sulfamic acid general equipment-cleaning bulletin; ☐ names of formulators offering cleaners based on sulfamic acid.

Name _____

Company _____

Address _____

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State _____

What's Going On in Commercial Refrigeration

News of Markets, Products, Methods

Explains In-Store Meat Preparation Problems and Development In Calif.

Self-service fresh meats ranks as an outstanding development in food store merchandising in the past decade. To the refrigeration industry, it meant not only new concepts in the design of refrigerated display fixtures, but also in the design and equipping of in-store meat preparation areas.

Much of the original work on the in-store meat preparation problem took place in California, and in the accompanying article, George D. Brauer, Tyler Refrigeration Corp. divisional manager in California, relates some of the history of the development, and the approach to the problems.

Self-Service Meat Dept.

Visible Packaging Gives Store Customers Contact with Butcher, Ups Fresh Meat Sales

In 1950 a U. S. Dept. of Agriculture report listed the things the public did not like about self-service meat.

Number one objection: the public felt a lack of contact with the butcher. So Tyler tried a new concept of self-service meat, starting with a lower front case, and became among the first in the country to push the concept of keeping meat

under 35° for its entire trip through the store.

All the surveys made out here about self-service meat showed market operators were not doing it the way the public wanted it done.

That is probably the reason the report compiled for the Armour Co. showed southern California at that time was only doing one-half the meat volume

through self-serve meat stores that was being done elsewhere.

There was another reason. The general design of markets in southern California was to have half self-service, and half service. That did not prove anything to anybody.

In 1949 Tyler equipped a Safeway store in Compton, in July, with 50 ft. of service meat case. We converted it in November to 100% self service, using the new concept of self-service meat, which was visible packaging. The reason for visible packaging was to answer the customer's objection to self-service meat.

COULD TALK TO BUTCHER

This new concept gave contact with the butcher because we had sliding glass partitions over the case, and the customer could call his attention. If she wanted to talk to him, he could slide the glass and talk to her.

This arrangement answered her questions, of every kind, because prior to visible packaging the women would say: "Has this meat been frozen, and if so, can I refreeze it again?"

Similarly the question: "Is this your first or second grade meat?"

ONLY ONE QUALITY

The question was answered. They could see it being packaged and it was the only quality of meat the store had.

After Safeway put in the first new self-service meat market in America, 100% self service, the total store volume increased so tremendously they had to hire two policemen to keep poachers off their parking lot, in order to speed up store traffic.

We used that Safeway installation as a showroom and went to the largest operators in southern California, starting with Von's, and showed them the concept of 100% self-service meat merchandising.

Von's, who had a market in Westwood planned with 76 ft. of service meat case, let us redesign the store and put in 76 ft. of self-service meat case.

In a store doing the volume of business that they do, they would today have to have about 40 butchers behind 76 ft. of service meat case. There isn't room for that many people behind the case.

'LOWERS LABOR COST, BETTERS OPERATIONS'

Now they can handle their volume conveniently in self service with lower labor costs and a much better operation from every standpoint.

The public let this concept of self-service meat grow very rapidly because they expected

(Continued on next page)

* HIGH LEVEL REFRIGERATION * AUTOMATIC DEFROST * EXTRA-HEAVY-DUTY COILING

a few of the TYLER ADVANCED DESIGN achievements that make possible this

SEE-MORE EASIER-REACH DISPLAY



Shopper buys more faster!



Impulse sales shoot up! with appealing display—quick product identification—easy reach to every part of display. Customer sees more, sooner—and better, with Tyler 33" no-glass, open-front Sales-Cases. They provide full, direct, uninterrupted view of merchandise—make packages easier to see, easier to read!

See us at the SMI Show—Booths A-700 - 704.

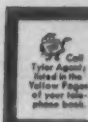
(Above). New Tyler Sell More Super Deluxe Shopping Cart (patents pending). Exclusive lower tray slides out for fast, easy, rear unloading at checkout. Extra-large capacity for oversize bulk items.

Better, lower-cost refrigeration! Faster turnover, greater impulse purchases, bigger profits! No wonder more and more leading food merchandisers are making the big, store-wide switch to Tyler 33" no-glass, open-front Sales-Cases. Ask about the many Tyler-pioneered innovations that help food store operators SELL MORE and SAVE MORE!

TYLER

PIONEER of important improvements

TYLER REFRIGERATION CORPORATION, Niles, Mich.
Canada: Tyler Refrigerators, 732 Spadina Avenue, Toronto, Ontario. (Export Tyler Refrigeration International, C.A., Apartado Postal 9262, Caracas, Venezuela, S.Amer.)



Tyler Refrigeration Corporation, Dept. AR-4, Niles, Michigan
Rush latest data on new Tyler Sales-Cases Rolling-Cold Packaging Conveyors Well-In Coolers Storage Freezers Reaching Refrigerators Service Cases Condensing Unit Assemblies Shelving & Color Compatibility System Store Planning.

NAME _____
ADDRESS _____

(Continued from preceding page)
it. It answered all objections to self-service meat.

But we found very quickly that in an air conditioned room in the back of the cases that we were not doing what Tyler had always said we must do:

They were constantly telling us we must keep the meat at but not below freezing during its entire trip through the store.

Here we were, taking meat out of a 30° cooler and putting it in a 60° room. In half an hour it had warmed up considerably.

IMPORTANCE OF MEAT BEING BELOW 35°

So, many tests were run. Armour's and Swift's have run tests which prove the importance of keeping the meat below 35°, keeping the meat at but not below freezing during its entire life through the meat market.

We worked on a survey, with Roy Phippeny, who is a well known and successful self-service meat operator for Von's, on a test that they made on some other cases in another store, because we were trying to find out how you get shelf-life out of meat.

We found out that a dirty meat block could coat a piece of meat with bacteria and if you put that meat in a case at 45 or 50° it will turn black in one day.

WHAT BELOW 35° TEMPERATURE HALTS

We found out many other things, but first of all we found out that meat does not discolor, bacteria do not multiply, the meat does not bleed, if the meat is kept below 35°.

So then, some of the Tyler factory personnel, and Phippeny of Von's, and myself, started working on something better than a refrigerated packaging area.

At that time we came up with two things, one of which was a non-refrigerated working area for self-service meat preparation, and "Rolling Cold."

"Rolling Cold" is Tyler's name for equipment sometimes called a "cold table." There are many different names for it.

In 1952 we designed Alexander's market, on N. Vermont St. in Los Angeles, with a glass-enclosed area for the meat cutting room, an aisle 3 ft. wide between the cases and that refrigerated area, permitting the customer to see the entire meat cutting operation and the cleanliness, and the fact that it is under refrigeration.

Coming through the wall, and extending the full length of the meat cases, is the Tyler wide "Rolling Cold" setup at which point the meat is wrapped by the girls, and priced.

At the end of the "Rolling Cold" lineup, can be seen a walk-in door.

'MODERN TREND'

That is the most modern trend in self-service meat layout today because the finished product moves quickly from the end of the line.

If it is going in the case it goes on the front conveyor and the case man takes it off the conveyor and puts it in the case.

Or, if it goes in that back room, it is stored on shelves in wire baskets. These baskets are



"ROLLING COLD" cases at far left keep fresh meats at the proper temperature while being prepared. Notice one channel of the Tyler Rolling Cold is being used for hand wrapping packages of meat that move on the curve conveyor directly to the man at the automatic scaler.



CONVEYOR equipment makes it possible to keep fresh meat at the proper low temperature by quickly moving from loading dock to holding box. Here a meat cutter is pushing five quarters of beef at one time in a quick move from a refrigerated truck directly into the cooler at Clark's Market, Puente, Calif.

too heavy for the girls, or anyone else, to handle.

That is the modern design, in self-service meats, with the girls working in normal room temperatures, while the meat is being kept cold in the "Rolling Cold."

Temperatures in the "Rolling Cold" vary with the entire system of self-service meat operation.

A 30° piece of meat taken out of a cooler, will very quickly warm up to room temperature, so the problem is solved by a system of speed in handling the meat from the cooler to the case, so when it gets to the case it will be below 35°.

The amount of time it is out of the "Rolling Cold" determines the number of degrees it will warm up.

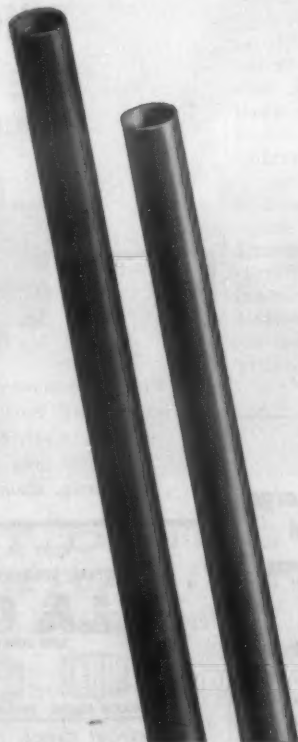
In other words, it is handled quickly in small amounts and goes through the whole process (Concluded on next page)

about a foot and a half long, 6 ft. deep, and 14 in. wide.

This size basket permits very rapid inventory, is not too big so it can be easily handled, not

**WOLVERINE
LEADS
THE WAY
WITH:**

**COPPER AND ALUMINUM
TUBE FOR REFRIGERATION**



Anticipating—and meeting—all the tubing needs of refrigeration and air conditioning manufacturers is but another of the reasons why Wolverine Tube is recognized as a leading supplier to this industry.

That's why, in addition to straight length commercial tubing, Wolverine also manufactures long-length, bunch-type coils as well as level-wound coils—in a wide range of sizes and alloys in both copper and aluminum.

If, for example, your manufacturing problem involves (1) the continuous feeding of automatic equipment; (2) complete inventory flexibility; (3) an end use requiring a long length of tube—then Wolverine commercial refrigeration tube in coiled form can help you achieve maximum efficiency.

You'll find, too, that Wolverine's product and service dependability . . . its Tubemanship . . . rigid quality control and sound engineering will also help you achieve new standards of product reliability. Next time you order copper or aluminum refrigeration tube—insist on the products of Wolverine Tube. For complete information write for your copy of Wolverine Serves The Refrigeration Industry.

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Visible Meat Packaging--

(Concluded from preceding page)

from storage, or holding box, over the cold table and into the display case, or back to another holding box, in a matter of not over 15 minutes.

CAN'T BE AWAY FROM REFRIGERATION LONG

At the extreme it should not be out of refrigeration over 15 minutes, at the very longest.

Regarding the temperature at which "Rolling Cold" is kept:

"Rolling Cold" is not designed to cool meat down.

Unwrapped meat can be kept at a temperature of 29° without freezing it, but if the "Rolling Cold" case is kept too cold then the speed of the meat through the "Rolling Cold" case must be very rapid.

Otherwise the surface of the meat will be chilled, and the surface will actually freeze, causing it to turn dark.

Education of meat operators, in the proper handling of meat, is really very simple, and a lot of time is saved, if it is done the way we suggest.

It is very easy to get hold of a meat manager in a store, go in to a cooler, and take a loin that sticks at 30°, or maybe 32°.

Set the cutoff at maybe half a dozen New York cut steaks out of that loin, but cut them in the cooler, and either wrap them in the cooler, or wrap them and get them back in the cooler within a minute's time, so there is no possible warm-up of that meat.

Then it is necessary to put fresh thermometers in the center of that meat. We use Weston dial-type, stem thermometers, so that the entire thermometer is embedded in the center of these 1-in. thick steaks.

Leave all the steaks out, except one, in the meat processing room. Record the temperature of the first steak, on a chart, and put it in the case immediately.

Let's say that temperature is 35°. The first steak that warms up, to say 40°, is wrapped and put in the case. Record that steak as number two at 40°.

The next one, warmed up to 45°, record as number three steak, and put it in the case. Do this until half a dozen steaks have been used up, all at 5° temperature differences.

6 DAYS SHOP LIFE

The result, very quickly found out, is that a steak which is at or below 35° when it is put in a case will have approximately six days shop life before it needs to be rewrapped.

If it is put in at 40° it has about four days shop life. If it is put in at 45° it has two to three days shop life. If put in the case at 50° it will turn black in one day.

Plexiglas Refrigerated Circular Unit Offered To Help Impulse Sales

SANTA ANA, Calif.—To help impulse buying for the florist trade, and for any item requiring refrigeration, such as candy or pastry, Austin O. Hicks of Santa Ana Refrigeration has designed and built a plexiglas refrigerated unit 24 in. in diameter, insulated on bottom and sides.

Hicks visible container is circular, except at the back where the small covered mechanical unit is located. The round shape is ideal, Hicks said, for display purposes in locations where store traffic is good, such as cash register positions, and check-out stands.

The circular container has a wire stand for orchid display. The refrigeration can be adjusted to temperatures desired.

Modernizes Closed Cases, Adds Units

ATLANTA—Warren Co., Inc. has modernized its "Master Merchandiser" closed case line and retained such claimed advantages as oversized service doors with four doors offered in both 8 and 10-ft. lengths and adjustable main shelf on both single and double-duty models which will accommodate 30-in. platters.

The line includes model TS for display and storage of fresh meats, model T for top display of fresh meats, and model F for top display of sea food and poultry. "Coloramics" bands are optional at no extra charge. In addition, the 26-in. display front is framed in stainless steel and there is Warren-patterned stainless steel end trim. Bumper rail is plain stainless steel.

New lengths of "Diamond Jubilee" units are 8 ft. 6 in. and 10 ft. 6 in., including ends, for models T and F. An F-6 unit is also offered. Sliding doors have 20½-in. clearance, Warren indicated, and service doors and large display front are glazed with "Perma-Vue," which makes possible re-glazing without taking the case out of service.

There is a 12-tube coil in the top of single and double-duty cases for fresh meats with an additional eight-tube coil in the storage model and a 70-ft. bare tube coiling beneath the shelf of the top case. Warren claims this maintains proper humidity to eliminate meat shrinkage.

Baked-enamel baffle is said to prevent accumulation of moisture and guarantee thorough drainage after defrosting. Porcelain exteriors are acid-resistant and display area is all-porcelain except for the stainless steel one in the sea food and poultry model.

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To Eye Low Temp

Cryogenic Equipment, Developments Sept. 3

CAMBRIDGE, Mass.—Sept. 3-5 is the date set for the 1958 Cryogenic Engineering Conference to be held at Massachusetts Institute of Technology here, according to K. D. Timmerhaus, secretary of the engineering conference.

Technical papers and discussions will deal with engineering research and development at very low temperatures, said Timmerhaus, member of the Chemical Engineering Dept., University of Colorado, at Boulder.

It is planned to discuss cryogenic processes, applications, equipment, and properties. Deadline for abstracts from those who wish to present papers is set for June 1, the secretary said.

Yugos Like?

Put Up Self-Serve Super In Belgrade

WASHINGTON, D. C.—An American-style supermarket was opened in Belgrade, Yugoslavia recently, according to the National Association of Food Chains.

A direct result of the "Supermarket USA" exhibit which NAFC and the Commerce Dept. set up last September at the Zagreb trade fair, Vracar, Yugoslavian commercial enterprise, has patterned building, layout, and store operations after that exhibited replica of a fully stocked typical American store.

Representatives of the Yugoslavian food industry purchased refrigerated cases, display counters, and checkouts after the fair.

Set up along lines suggested by NAFC, the store is the first self-service one in Belgrade as well as the first supermarket. Some non-food items, such as textiles, will also be sold, it was noted.

NCRSA REPORTS

6 New Distributors Join

PHILADELPHIA—Six new distributors have joined National Commercial Refrigerator Sales Association, the group announced.

They are: Malcolm Hinkle, Inc., Pampa, Texas; Johansen & Anderson, Joliet, Ill.; Paul Lamontagne Enr., Quebec, Que., Can.; Refrigeration Service & Supply Co. Ltd., Honolulu, Hawaii; Phoenix Refrigeration, Inc., Cleveland; and A. B. Wynn Refrigeration, Shreveport, La.

Fast Food Clinic Displays

B-B Fountain-Luncheonette

ELMIRA, N. Y.—Hamble Equipment Co., Inc. here, distributor of The Bastian-Blessing Co., held a two-day Fast Food Clinic in its showrooms at 308-310 Carroll St. recently.

Soda fountain operators, restaurateurs, and ice cream company representatives from the Elmira trading area were invited to see various appliances in operation and to examine the labor-saving units which made up a new 35-ft. Bastian-Blessing fountain-luncheonette.

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First in economy... finest in design... the La Crosse THRIF'AIRE Bottle Cooler! The exclusive "plug-in-panel" refrigeration unit is quickly and easily removed. Beautiful grey baked enamel... 42" and 62" lengths... fingertip, stainless steel, slideaway doors.

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Air conditioning equipment* for large buildings is bought and installed by readers of the NEWS

WHO SPECIFIES OR BUYS?

Engineers who are employed by all four of the most important factors: (1) large air conditioning contractors, (2) consulting engineers and architects, (3) large buildings and factories, and (4) the OEM manufacturer—any one or all can affect the sale of your product if it is to be installed in a large building. As consulting engineers will tell you and as you know, there are very few "closed specifications." The vast majority is "or equal" or "open end"—by type but not by brand name. Therefore, to get the most effective sales results, you want to influence more than just one engineering group. You should sell all the buying factors. AIR CONDITIONING & REFRIGERATION NEWS can do this job most effectively.

HOW MUCH WILL THEY BUY?

Estimates indicate a total volume of ten billion dollars over the next ten years. Aside from new construction, the saturation of air conditioning installations in offices is less than five per cent, and in factories—less than one per cent. In 1957, this market was estimated at nearly 600 million dollars, a gain of almost fifteen per cent over 1956. This increase was the largest in the industry.

* WHAT PRODUCTS DO THEY BUY?

In addition to air conditioning units and their usual accessories, such as condensers, cooling towers, coils, refrigerants, and motors, engineered air conditioning systems for large buildings, factories, etc. require such items as ducts and duct materials . . . controls . . . piping . . . insulation . . . air moving equipment . . . air cleaning and washing systems . . . pumps . . . diffusers and grilles . . . boilers . . . heat exchangers . . . furnaces . . . dehumidifiers . . . humidifiers . . . vibration eliminators.

WHAT DO THEY READ?

Just as you depend upon your newspaper for the latest news and information, so do these contractors and engineers turn to AIR CONDITIONING & REFRIGERATION NEWS for the timely facts and information concerning their job, their industry. The NEWS is the only weekly and the only newspaper in the industry. (And it has a 32 year history of dependable accuracy.)

Every Monday morning they pick it up—and start reading! There is no other complete news source available to them and, once read by the subscriber, it is passed along to others in the company (on an average of more than four). The NEWS contains the latest news stories on installations, products, and ideas every week—the kind of information contractors and engineers need.

In 1957, advertisers of air conditioning units and components for engineered systems used more than twice the volume of advertising in the NEWS as in any other industrial publication. Contact your local NEWS representative or write for more facts on how the amazing advertising power of the NEWS can help you get a bigger share of the large building market.

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& REFRIGERATION**

The Weekly Newspaper of the Industry

NEWS

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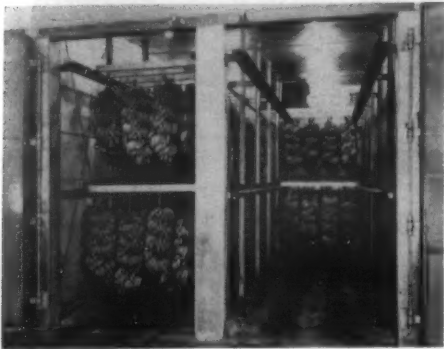
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LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon



Unit Coolers with Steam Coil Give Accurate Temperature, Humidity Control for Bananas



THIS 12-room banana and produce storage plant in Vancouver, B. C., Can., utilizes six UC180 unit coolers with 1-row steam coil for proper humidity control for the banana storage rooms and two UC-240 unit coolers for each of the produce storage rooms.

BURNABY, B. C., Can. — Nearly everybody has heard by now that "you should never put bananas in the refrigerator"—but that is not the entire story.

Most home refrigerators have an average temperature of 38

to 45° F., and except for setting it at "Defrost," that's about it.

Fruit and produce storage plants have a different need—they often have to ripen fruits and produce in the refrigerator—a process requiring extremely accurate temperature control.

BANANA STORAGE PLANT

At the Kelly-Douglas Co. here, Architect Van Norman & Associates and Contractor Kingsway Refrigeration, both of Vancouver, B. C., designed and built a 12-room banana and produce storage plant.

Dunham-Bush refrigeration equipment, purchased from Refrigeration Supply Co., Ltd., also of Vancouver, consisted of the following: six UC180 unit coolers, each unit cooler having a 1-row steam coil for proper control of humidity for the banana storage rooms; and two UC-240 unit coolers for each of the produce storage rooms.

FAST, SLOW RIPENING

The steam coil on the UC180 unit allows the temperature to be held to 56° F. for ripe bananas; or to be raised to 70° F. for fast ripening (3 days) or to 58° F. for slow ripening (10 days).

Humidity, controlled by water mist sprays, ranges from 90% to 95%. On the roof is a Dunham-Bush CDT-60P copper deck cooling tower with propeller.

Store To Home

Studies Quality, Safety Changes In Frozen Foods

WASHINGTON, D. C. — Studies to determine the changes in quality and safety of frozen foods after they leave the retail store and are brought into the home is one of 35 research projects the Agriculture Dept. is considering in an effort to increase efficiency and boost sales of food by retailers and wholesalers.

Another would be aimed at finding alternative methods of financing store expansion for independent retailers. It was also recommended increased research be undertaken on preservation of food with special emphasis on antibiotics, radiation, and inert gas packaging.

Top recommendation in packaging was for expanded studies on consumer packaging of produce, meat, poultry, and dairy products to maintain and improve quality, evaluate new types of packaging materials, and protect products from damage or deterioration.

Installs

Refrigerated Fresh Egg Merchandiser

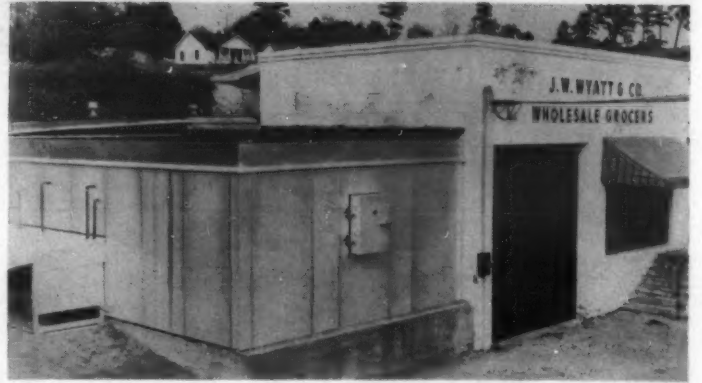
LOS ANGELES — First installation of a refrigerated fresh egg production model merchandising fixture has been made at the Alpha Beta Food Market here.

It was designed by William Frederick, partner in Bill's Ranch Market in Burbank.

Dubbed the "Hen House," the unit is being represented and sold by F&G Corp., a firm jointly owned by Fredrick and his supermarket partner, Nate Gilbert.

Second installation of the Hen House was made at Foods Co. in Torrance, Calif.

Integral Tar, Gravel Roof Eliminates Need for Shed Roof on Expandable -5° Frozen Food Vault



Integral tar and gravel roof is a feature of this "Reco-Fab" model S17810/7M "Frosti-Vault," 18 by 30 by 10 ft. used by wholesale grocer J. W. Wyatt & Co., Danville, Va.

RICHMOND, Va. — Recony Sales & Engineering Corp. here has erected an outdoor frozen food vault with integral tar and gravel roof for a Danville, Va. wholesale grocer.

Measuring 18 by 30 by 9 ft., the freezer at J. W. Wyatt & Co., Inc.'s site has exterior and interior wall sheathing of aluminum "Metalply" with "Fiberglass" insulation. With overlap construction of wall sections there are no hand holes in the walls for inserting lag screws, it was explained, and no loose and separate cover plates for hand holes. This is claimed to

permit easy and economical expansion.

Refrigeration in the Acme Foods Stores distributor's vault keeps temperature at minus 5°. It is provided by two independent 3-hp. air-cooled condensing units. A platform outside Wyatt's main building was extended to allow same-level access to the unit, it was pointed out.

Integral tar and gravel roof is said to eliminate need for a shed roof or other roof protection. This feature insures an absolute moisture and vapor-tight ceiling, it is claimed.

Jewel Tea To Push Record \$9,000,000 Growth; National Tea Also To Expand

NEW YORK CITY — A record \$9 million expansion plan will be carried ahead this year by Jewel Tea Co., Inc., Melrose Park, Ill., Franklin J. Lunding, chairman, told the annual meeting here.

National Tea Co. of Chicago also indicated it will continue expanding.

Part of Jewel's expansion will be met from depreciation and retained earnings, the executive stated. But additional outside funds also will be needed. The company is exploring the best means of borrowing, Lunding indicated, in "today's more favorable" money market.

Jewel is going ahead with plans to open "a minimum of 35 new supermarkets in 1958," the chairman declared. Five have already been opened, another 20 are under construction.

This, Lunding explained, is two-and-a-half times last year's new store openings and will result in the addition of about 1,500 new jobs in the firm's food outlets.

Harvey V. McNamara, president of National Tea Co., said National is moving forward with expansion plans. Already it has opened 24 new stores in

the first 11 weeks of this year. Nine of these were listed as relocations.

"This is a better rate than we achieved at the beginning of last year, when financing of new construction was tougher," the executive opined. He added that National now has 120 sites leased for new stores and construction will be completed on a good share of them by the end of the year.

In 1957, the company opened 61 stores, 18 of which were relocations.



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Efficient operation makes a product easier to sell on one hand; builds solid customer satisfaction on the other. Precision engineering, only the best materials, skilled craftsmanship, and over 25 years' experience in commercial and industrial refrigeration add up to higher efficiency for every Larkin product. And this means lower operating costs—important to buyer and seller alike.

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Bulletin 709 cross-the-line solenoid starters are made in 8 sizes with ratings up to 300 hp, 220 v, 400 hp, 440-550 v.

Allen-Bradley starters have become a standard in the refrigeration and air conditioning industry. Having only ONE moving part... long life and trouble free operation are assured. A further guarantee of customer satisfaction are the silver alloy contacts which are always in perfect operating condition—they do not require regular service attention. This same design is used throughout the line—even in the big Size 7. Specify Allen-Bradley—you cannot go wrong!

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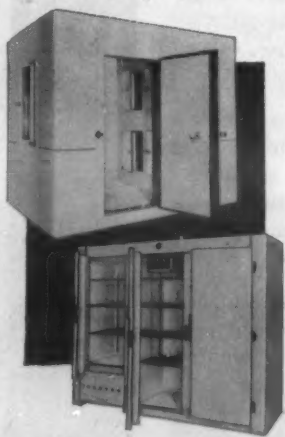
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Recold Patents Cooling Unit Corner Construction

LOS ANGELES — Recold Corp. has received a patent covering its corner construction, reports H. T. (Hy) Jarvis, president.

The patent was issued to Dan D. Wile, Recold's vice president and chief engineer, who designed the unique corner construction which is now found on Recold's evaporative condensers, cooling towers, floor units, and air conditioning equipment, the announcement said.

By utilizing this corner construction, Recold's units provide very easy accessibility—being quickly disassembled and as easily reassembled using only a screwdriver, according to the company. Also the corner construction is said to assure a watertight and airtight seal.

Business Program To Highlight SMI Confab

CHICAGO—Super Market Institute's 21st annual convention will offer "a stimulating business program" in Atlantic City, N. J. May 25-28.

Exhibits in the Convention Hall are to be bigger and better than ever, SMI boasts. "A new and more convenient exhibit floor plan" will "help you see more and learn more."

No room reservation is accepted without registration, the group warns, so advance registration forms are being sent out to SMI members.

Richard W. Daspit, manager of convention and mid-year conference, says SMI's first convention in the "World's Largest Convention Hall" promises to be the "outstanding meeting in the institute's history."

NCRSA Sets Convention

PHILADELPHIA — National Commercial Refrigerator Sales Association will hold its 12th annual convention at the Golden Gate hotel, Miami Beach, Fla., Nov. 17 to 19, the association announced recently.

The hotel has guaranteed that special convention rates will be available to members both before and after the meetings.

U. S. Offers Report On Food Radiation

WASHINGTON, D. C.—"The Interdepartmental Radiation Preservation of Food Program: First report by the Interdepartmental committee," PB 131169, is now available for \$1 through the Office of Technical Services, Dept. of Commerce.

Prepared by various government departments, this report covers findings up to February 1957.

Welscher Adds Duties as V. P., Gen. Mgr. of Haverly

NEW YORK CITY — J. N. Welscher, vice president and general manager of John Wood Co.'s Superior Metalware Div., has been elected vice president and general manager of the company's Haverly Equipment Div., J. B. Balmer, company president, has announced.

Welscher will now supervise

the operation of both Superior and Haverly from Haverly's Royersford, Pa. offices. A director of the National Dairy Council and member of the Dairy Industries Supply Association, he has been associated with John Wood Co. for 37 years.

The Haverly Equipment Div. manufactures refrigerated bulk milk coolers, can coolers, ice coolers, and chilling units. Superior Metalware Div. manufactures waste receptacles and dairy metalware.

To Eye Coin Vender, Other 3-A Sanitary Standards May 20-22

WASHINGTON, D. C. — A wide variety of dairy equipment is on the agenda for consideration at the next semiannual meeting of the 3-A Sanitary Standards Committees, it was announced by the chairman, Dr. E. H. Parfitt.

The meeting will occur at the Hotel Pick-Melbourne in St. Louis, May 20-22.

Tentatively scheduled for con-

sideration are 3-A Sanitary Standards for coin venders, separators and clarifiers, farm tanks, ice cream freezers, air-under-pressure, and C-I-P lines for farms.

Reports are also expected from study groups on plastics and rubber, Dr. Parfitt pointed out.

Participants will be some 150 sanitarians and public health

officials, representatives of dairy processors and dairy suppliers and equippers, and representatives from the Milk and Food Program, Div. of Sanitary Engineering Services, U. S. Public Health Service; and observers from other government and military agencies from all parts of the country, according to the committee's announcement.



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Experience has proved you can install and service Hussmann equipment easier, faster and more successfully . . . if you read and follow Hussmann recommendations to the letter.

This procedure assures your customer maximum satisfaction . . . with minimum operating costs all along the line.

That's why Hussmann service and installation instructions should be on your "required reading" list!

One more thing! If you run into a problem and need assistance . . . get in touch with our local representative or our factory in St. Louis.

We welcome the opportunity to help you and your customers.



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Refrigeration Problems And Their Solution

(As Written by Paul Reed)

Continuous Operation at Constant Suction Pressure

In the early days of mechanical refrigeration, and to some extent today, the flow of liquid ammonia was regulated by a hand expansion valve, usually of the needle-valve type. It was located at the entrance end of the evaporator coil in the cold room or brine tank.

Except for short shut downs for oiling, cleaning, or minor repairs, the compressor ran continuously day and night. On some installations having more than one compressor, piping and valving arrangements were provided, so that one compressor could be shut down for extended repairs, or in case one or more rooms were shut down for disuse.

In the latter case, the liquid re-

frigerant was cut off from the evaporators in those rooms that were shut down by fully closing their respective expansion valves, or other shut-off valves in the liquid lines to those rooms.

TEMPERATURE REGULATION BY VARYING AMOUNT OF LIQUID REFRIGERANT

The point is, that temperature regulation in the various rooms was not obtained by starting and stopping the compressor, as is the custom with most present-day automatic and thermostatically controlled installations, especially of the smaller sizes. With the compressor operating continuously, temperatures in the various rooms

or brine tanks were regulated by varying the amount of ammonia to the evaporator in the room.

By opening the expansion valve a little wider, more liquid ammonia was let into the evaporator, and this made more of the evaporator active. With the same heat load, this gave a lower room temperature or allowed a greater heat load to be carried and still maintain the same room temperature.

For example, in a small ice and cold storage plant there are four storage rooms and a brine tank all on one ammonia compressor. Normally the suction pressure is 20 p.s.i.g., which corresponds to a little over 5° F. Thus, all of the active surface of the coils in the rooms is at 5° all of the time.

By active surface, is meant the part of the evaporator coil in which liquid ammonia is being evaporated, not the part beyond the active surface filled with superheated ammonia vapor. This superheated part may be frosted, although not as heavily frosted as the active surface, but it is not contributing very much to refrigerating the room.

It is not necessarily true that all of the rooms are coiled the same; that is, per square foot of room there may be different amounts of available coil area. One room, which is the low temperature room, may be coiled heavily (high ratio of coil to room size). Other rooms may have less coil surface in proportion to size.

With the expansion valve on the low temperature room open wide enough to make the entire coil active, the room may be held at 20° F.—a difference of 15°.

If the expansion valve is closed somewhat, less of the coil is active, the temperature rises, say from 15° to 25°, and the room temperature likewise rises from 20° to 30°; so temperature regulation in the room may be secured by regulating the expansion valve, for this varies the number of active coils of the evaporator.

This variation of temperature and load may cause some variation in the suction pressure of 20 p.s.i.g., and consequently in the temperature of the 5° active coil. How much the variation in the load affects the suction pressure and temperature depends upon how much variation there is in the load, and also upon how big the room is in relation to the load.

If the room only constitutes say, 10% of the total load, even wide variations of load or temperature in that one room will not have much effect on the total load or on the suction pressure.

If the total load falls off considerably, the suction pressure drops, so the amount of liquid ammonia being fed by the expansion valve or valves is more than enough to maintain temperature. Due to the excess liquid ammonia, more of the coils become active, and, in fact, they may frost out on the suction line to the compressor.

The foregoing discussion was for the purpose of showing how it is possible to have various temperatures in separate rooms on a system, even though the suction pressure is the same throughout the system. In this example, it is shown that different room temperatures may be obtained by varying the ratio of active evaporator surface to the room size.

Increasing this ratio reduces the temperature difference, so if the evaporator temperature remains constant, the room temperature will be less. Thus, to carry the room colder, the amount of active coil surface is increased.

It is possible to vary the temperature in any one room from time to time by regulating the expansion valve to give more or less active evaporator surface. However, it is not economical in first cost to carry higher room temperatures by reducing the ratio of active evaporator coil to load.

Doing this has a bad effect on humidity conditions. A low coil ratio means a high temperature difference between the coil and the room. To maintain the necessary room temperature, a high temperature difference requires a low coil temperature. The room air is excessively dried by contact with the low temperature coil, so the humidity of the room air is low, foods lose weight, and their surfaces become dried and darkened.

This very low coil temperature requires a low suction pressure. Lowering the suction pressure of

a compressor lowers its capacity and increases the cost.

Also, a low suction pressure requires greater displacement of the compressor than a higher suction pressure, so a larger and more expensive compressor must be used than at higher pressure.

They have several compressors operating at different suction pressures. For low temperatures, they may even use "booster" compressors to give two-stage use.

These same principles that apply in large equipment, apply also in small equipment. High humidities, low first costs, and low operating costs, require proper balancing of coil surface to refrigerator size and load, and to the size and displacement of the compressor.

Expansion valves must be adjusted to maintain fully active coils. This is a first must for proper operation, and yet this is a rule that is so often disregarded. A partly active evaporator is a common fault too often overlooked by the service engineer.

The old rule in refrigeration "Keep your head pressure down, and your suction pressure up," requires a fully active evaporator, a low temperature difference between the evaporator and the refrigerated air (or liquid), and a proper balance between the evaporator and compressor capacities at the highest pressure.

On all jobs be sure that the expansion valve is feeding the coil fully. You will be surprised how many ills this will correct.

HOW TO WIN CUSTOMERS and MAKE FRIENDS—

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UNIT AIR CONDITIONERS

Now built in capacities of 3 to 15 tons of refrigeration, these dependable units are profitable to handle, and profitable to own!

Backed by over a half century of air conditioning experience. Fully warranted. Beautiful finish.

Frick units may cost a bit more but are well worth it. They are conservatively rated, and durably built by a company whose policies have been tested through 105 years of successful experience.

Some good territories still open for Distributors.

Get the whole story: write, wire or phone.

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You Asked About It

From the many requests for information it receives, the News will select and publish some of general interest. In many instances, the answers will be supplied by authorities in the industry. If you do have a question or problem concerning which you think the News might be able to help, be sure to state the problem clearly, and provide as much information as possible.

Q. What is the difference between a ground and a neutral wire? How can something be grounded if there is no special wire from the unit to a water pipe or something similar? Does a ground wire carry current?

C. D.—Minneapolis

A. The confusion between the terms "ground" and "neutral" is due in large part to misuse of the former by plumbers and craftsman other than electricians.

Functionally, it is important to remember that a neutral wire is necessary for the operation of equipment; a ground wire is not. The neutral wire is one of the two or three wires supplying the power. Its voltage relative to the earth is always zero, but when a load is across the line, the neutral wire does carry current (amps). On either a two-wire or three-wire system (single phase), the neutral wire has to be connected to get operation.

The neutral wire, in actuality, is grounded to the earth by the power company somewhere before the service box, usually at the transformer supplying a group of homes or commercial service boxes. For this reason, the term "ground" is often applied to the neutral wire.

A true ground wire is not actually needed to operate equipment. Instead, it is chiefly for safety. In homes it also tends to reduce radio and TV interference. By definition a true ground is the connection by a conductor between a motor frame or metal enclosure around electrical equipment and a pipe or buried plate in contact with wet earth.

When we speak of a motor having a ground, we mean that the current has found its way through the insulation or correct path to the metal surface of the motor. This metal surface then assumes the same electrical potential (voltage) as the wire at that point.

While many times it is possible to tell what is meant by the term ground just by the general conversation or reading material, it would aid in preciseness if the term neutral were used where it applies.

An answer in the Feb. 24 issue told how to clean a fin-type cooler in a meat packing plant when it became coated with grease and dirt.

Dale O. Bender of Research Products Corp. writes that "an air filter would eliminate this necessity. Cleaning of the air filter is a simple and cheap process," Bender says.

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Defense Buildup Uses Air Conditioning

At Soon-To-Be Held Hydrogen Bomb Tests At Eniwetok Site At Military Bases, Test Facilities Across the Country

ALHAMBRA, Calif.—Charles H. Laws, president, Kilpatrick & Co., Inc., recently disclosed major repeat business from Holmes & Narver, Inc., international constructor and engineer, for special dehumidifying equipment for Atomic Energy Commission installations at its Eniwetok Proving Ground.

Since 1948, this South Pacific site has been the permanent off-continent testing site for nuclear weapons, it was stated.

Says Laws: "The repeat business covers units of equipment which were designed by Kilpatrick & Co. for Holmes & Narver for special dehumidifying equipment applications in 1950. As equipment requirements expanded," he says, "continuing contracts have been awarded to that organization by Holmes & Narver."

The new dehumidifiers are again being fabricated by air conditioning manufacturer Drayer-Hanson, in accordance with the design as developed by Kilpatrick & Co.

"They constitute," says C. W. Pollock, of Drayer-Hanson, manager of air conditioning and refrigeration, "continuous repeat-order activity between the designers and fabricators."

AEC orders have ranged in size from units, 5 to 10 hp. All have aluminum housing with stainless steel hardware.

The dehumidifiers, complete with Drayer-Hanson coils, fans, air-cooled condensers, etc., are equipped at Kilpatrick & Co. with refrigeration cycle, piping, and electrical work. They are 100% ready to work, require only power hook-up and distributing duct tie-in at Eniwetok.

Air Conditioning Supply Co., Los Angeles, has represented Drayer-Hanson in continuing transactions as sales agent.

LOS ANGELES—A record number of military bases, test facilities, and defense industries are gearing up for next season's heat, a recent report of activity at air conditioning manufacturer Drayer-Hanson indicates.

Business in the military bracket (accounting for an unprecedented 18% of the firm's new orders since Jan. 1) was noted by C. W. Pollock, manager of air conditioning and refrigeration, as "nationwide in scope."

"It reveals," he said, "high geared government expenditures for defense, missile, rocket, and space development and research. Plus," he continues, "an awareness of the need for recruitment inducement for Armed Forces and civilian personnel employed by them."

Projects cited in the southern California sector include an air conditioning installation to be made at the Jet Propulsion Laboratory of Cal-Tech, Pasadena; the Army Air Force, Camp Cooke; U.S. Naval Air Station, San Diego (in the photo laboratory).

A new service building and dispensary, Air Force Ballistic Missile Div., Inglewood, will utilize multizone and single zone types of air conditioning equipment.

Continuing work on the multi-million dollar Convair Astronautics project, near San Diego, will shortly see the new cafeteria building year-round air conditioned.

In Texas, at Love Field, Dallas — the Braniff Maintenance Base; and at Convair, Fort Worth, a new high altitude test facility.

Other highly-publicized test facilities due to keep cool include Engineering Analysis Sup-

port Facility, White Sands Proving Grounds, N. M.; Yuma Test Station, Yuma, Ariz.; and the Air Force Missile Test Center, Norfolk, Va.

The Naval Supply Depot, Bayonne, N. J., and the Charleston Navy Yard, Charleston, W. Va., are updating to include "packaged" air conditioning units at the former; a wide range of refrigeration equipment at the Charleston facility.

More evidence supporting Pollock's statement is continuing work at Patrick Air Force Base, Cape Canaveral, Fla.; Air National Guard Armory, Phoenix; and Mather Air Force Base Ammunition Depot, Phoenix, where Drayer-Hanson commercial-industrial system type equipment will be installed.

Plant areas of Douglas Aircraft and Hughes Aircraft, here, are also included—the former with "packaged" air conditioning systems, Pollock said in conclusion.

Bank of New York Installs 21 Floors Of Air Conditioning

NEW YORK CITY—Installation of air conditioning in 21 floors of the Bank of New York building at 48 Wall St. was reported to be "well under way" by Buensod-Stacey, Inc., New York air conditioning and manufacturing firm.

The first nine floors and two basement floors of the building were air conditioned some years ago to provide air conditioning of the banking area. An additional 320-ton centrifugal refrigerating machine is being installed, along with the necessary air conditioning equipment for the unconditioned spaces. It is expected that the equipment will be in operation by July 1.

Consulting engineer on the project is Jansen & Rogan of New York City.

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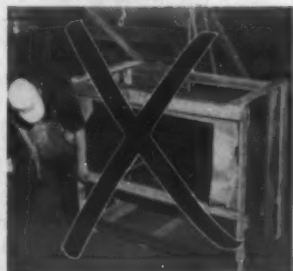
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TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Corrosion (1)

Since the News published a series on the principles of corrosion (April and May, 1957), manufacturers and servicemen who have experienced field corrosion problems where the principles applied have submitted them. Some of the problems have been solved; some have not.

An example of how carelessness in avoiding corrosion can cause a practical service headache is the case of a suction line on a reach-in food freezer which was frosting and dripping water, he did nothing about it because the unit was in a remote location where a little sloppiness didn't hurt and because the freezer operated satisfactorily.

In time that particular open-type compressor was replaced with a hermetic and the open compressor went into the replacement stock. On an emergency trouble-shooting job, this compressor had to be used as a standby to replace one with a broken connecting rod. But the bolts holding the suction valve to the compressor were so rusted out that what should have been a two or three-minute job turned into a 35-minute struggle.

One application engineer experienced an undue number of failures of butt-welded copper-aluminum joints which were ex-

posed to heavy concentrations of sea air. Suspecting galvanic corrosion, the engineer adopted the practice of wrapping tape around the joint and for 6 in. in either direction.

This simple expedient reduced the number of failures. Even though the two unlike metals were still in physical contact, the tape prevented a continuous film of salty moisture, making it impossible for electrical current to flow and for galvanic action to take place. (The moisture adsorbed on the surface of the tape was not continuous enough to bridge the gap between exposed surfaces.)

COPPER TUBING WITH ALUMINUM FINNS

One aluminum-copper problem which apparently has not yet successfully been solved is the use of copper tubing with aluminum fins. Although used extensively because of its thermal efficiency, such finned tube is still a source of trouble even in locations where there is no aggressive external atmosphere.

Almost always, where corrosion has occurred, the aluminum fins will be found to be powdery and white, and the underlying copper tube may be pitted. At first thought, it seems illogical that the copper should pit, since in any galvanic corrosion involving copper and aluminum, aluminum is the anode and should fail.

However, the reactions taking place in a corrosive medium where the aluminum fin touches the copper tube are complex. Depending on the process by which the aluminum fins were attached, and the state of cleanliness of the tube at the time of assembly, there can be dirt, copper oxide, lubricant, lacquer, or other foreign substances at the aluminum-copper interface.

When a corrosive liquid reaches the interface, it may simultaneously set up galvanic action between the copper and aluminum, electrolytic action between copper and whatever foreign matter is present, and direct chemical attack on both the copper and aluminum.

ONE SOLUTION—USE LACQUER

The application of lacquer to the completed finned tube or coil is one approach being used to solve this problem. In the amount added, the lacquer does not significantly reduce the thermal efficiency of the tube, since the major heat transfer is accomplished at the point of contact between the tube and fin.

Unfortunately, this very fact limits the protection that can be obtained by even a dip-coating of lacquer, for if there is even a slight defect or opening in the coating near a fin, the exposed portion will begin to corrode as if there were no coating at all—and in some cases, faster than if no coating.

Another major approach to solving the problem of finned tube pitting is the use of all-aluminum finned tube where practical and economical. While this method tends to solve the problem of galvanic corrosion by removing one of the metals, aluminum, itself, has corrosion problems which need solving—especially in aggressive environments.

The problem has been increased by the tendency to use thinner stock in the fins, and sometimes in the tubes.

Although there have been several angles of attack, at this time it cannot be said that the problem of corrosion in finned coils has been solved.

NEGLIGENCE CAN UNDO PROGRESS

Greater progress has been made in the case of cooling towers and evaporative condensers, although, in this case, a negligent or inexperienced serviceman can undo much of what has been accomplished.

The inner surfaces and pans of such units are usually coated with a mastic substance; the external surfaces are protectively painted. Normally, these surfaces are fully protected unless the coatings are scratched or chipped. While sometimes unavoidable, the scratching or chipping is usually done by a serviceman carelessly tossing his tools around.

Water treatment chemicals now available make trouble from this source unusual where the time and trouble to use them properly are taken. This, of course, requires effort and perhaps a bit of salesmanship on the part of the serviceman if he is to sell the customer on the need for periodic water treatment or an automatic water treatment setup.

One manufacturer points out

that a surprising number of servicemen don't even bother to clean out the sump within a few days after the installation of a new tower. Thus, the lignin and other extractables from the new redwood baffles contaminate the water and recirculate in the system, plugging orifices.

Occasionally, the only answer to a corrosion problem is to take some drastic correction like altering major components.

In one supermarket there was a remote cooling tower inside the market which was continually fouling up with green growth—due to the heavy concentration of organic matter in the air. From the serviceman's viewpoint, this particular model of water-cooled condenser was "overengineered" and almost impossible to clean. This problem was solved by using a roof-mounted air-cooled condenser.

Sometimes the serviceman takes corrective action, but because of a misunderstanding of basic principles, does the wrong thing as far as his specific problem is concerned.

One serviceman wrote that he had installed a dielectric coupling in the water supply line from a well to an evaporative condenser, but that "the line (in the unit) plugged up anyway, so the damned thing wasn't worth a dime."

A quick check revealed that the wells in his particular area were notorious for their high "iron scale" content. This gentleman had confused galvanic corrosion (which a dielectric

coupling will correct) with plain scale formation and perhaps some direct chemical attack. He needed water treatment; all the dielectric couplings in the world won't eliminate this scale.

In fighting corrosion, half a solution is sometimes better than none. One plant was having difficulty with the electrical switches and relays which operate the fans, blowers, and heavy motors in their plating room. The chemicals in the atmosphere were continually corroding the contacts making them inoperative or erratic, and calling for unscheduled service.

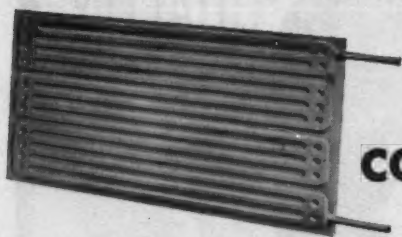
The plant engineer covered the switches and relays as much as was practical in each case. Then, in each enclosure, he placed a small plastic cap full of desiccant, reasoning that the desiccant would have a preferential attraction for any chemical fumes or moisture entering the immediate area.

Corrosion was reduced enough that periodic cleaning of the switches and replacement of the desiccant takes care of it—without having to make unscheduled calls.

USE DESICCANT TO PICK UP CORROSION

The technique of using desiccant to pick up corrosive substances in partially or completely enclosed spaces could easily be used elsewhere, and of course this is one of the functions the desiccant performs in a drier on a refrigeration system.

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Install 1,437 Air Conditioning Jobs In Fort Worth Homes In 1957

(Concluded from Page 1)
selves is presented in an accompanying table.

Comparison of the 1957 installations with those of 1956 and 1955 is shown in another tabulation.

Installations in 1954 totaled 598; in 1955, 1,179; in 1956, 1,616; in 1957, 1,437.

849 Jobs Put In New Homes

Of the 1957 jobs, 849 were installed in new homes and 588 in existing homes. The new home installations are further broken down between 396 installed at the choice of the owner or buyer of the new home and 453 installed at the choice of the builder.

Sales were down in both these categories. New home "owner" installations amounted to 564 in 1956 and 381 in 1955. New home

Residential Air Conditioning In Fort Worth In 1957

Contractor	1957 Total Units	-New Homes- Owner Builder	Exist- ing Homes	Year- Round Systems	Cool- ing Only	- Air Cooled - Remote S.C.	Water Cooled	With Tower	Sheet Metal Shop
1	327	110	172	45	322	5	327	..	Yes
2	110	24	25	61	70	40	104	5	Yes
3	82	9	..	73	12	70	82	..	No
4	71	20	35	16	55	16	71	..	Yes
5	66	12	44	10	56	10	66	..	Yes
6	62	6	39	17	47	15	50	12	Yes
7	56	7	42	7	49	7	56	..	Yes
8	56	27	..	29	..	56	56	..	Yes
9	54	24	2	28	26	28	53	1	Yes
10	53	19	..	34	20	33	53	..	Yes
11	53	15	1	37	20	33	53	..	Yes
12	52	10	22	20	35	17	52	..	Yes
13	43	10	5	28	16	27	43	..	Yes
14	43	37	6	..	42	1	2	41	Yes
15	39	13	..	26	9	30	39	..	Yes
16	30	8	2	20	10	20	26	4	Yes
17	26	..	24	2	24	2	26	..	Yes
18	25	6	4	15	10	15	25	..	Yes
19	21	2	..	19	2	19	2	19	Yes
20	18	2	2	14	4	14	16	2	Yes
21	17	2	7	8	9	8	16	1	Yes
22	14	2	8	4	10	4	14	..	Yes
23	11	2	..	9	2	9	11	..	Yes
24	9	..	..	9	..	9	9	..	No
25	8	1	4	3	5	3	8	..	Yes
26	7	1	..	6	1	6	6	1	No
27	7	5	1	1	6	1	7	..	No
28	6	1	..	5	1	5	6	..	No
29	6	2	1	3	3	3	6	..	Yes
30	4	..	2	2	2	2	4	..	No
31	4	1	1	2	2	2	4	..	No
32	4	1	..	3	1	3	4	..	No
33	4	1	..	3	..	4	4	..	No
34	3	3	..	..	..	3	3	..	Yes
35	3	..	..	3	1	2	3	..	No
36	3	..	..	3	..	3	1	2	No
37	3	1	..	2	1	2	3	..	No
38	3	3	..	..	3	..	3	..	No
39	3	2	..	1	2	1	3	..	No
40	3	..	3	..	3	..	3	..	No
41	3	1	..	2	..	3	..	3	No
42	2	..	..	2	..	2	2	..	Yes
43	2	1	..	1	1	1	1	1	Yes
44	2	..	..	2	..	2	..	2	No
13-1 each	13	4	1	8	5	8	12	1	..
Self- Installed	6	1	..	5	..	6	5	1	..
TOTAL	1,437	396	453	588	887	550	1,340	27	70

fied as "furnace" manufacturers, 25 as air conditioning and refrigeration manufacturers. There were four "furnace" makes in 1956, six in 1955.

The 25 air conditioning and refrigeration manufacturers are credited with a total of 901 units between them in 1957 for 62.7% of the total, while the 12 "furnace" makes with 536 units had 37.3% of the total.

(Included among "furnace" makes are wholly-owned subsidiaries of air conditioning and refrigeration manufacturers.)

This represents a considerable gain for the "furnace" group, which was represented by four makes in 1956 for a total of 293 units, or 18.2%. In 1955 six "furnace" manufacturers had a combined total of 187 jobs in Fort Worth for 15.9% of the total.



Tells the Truth about Temperature

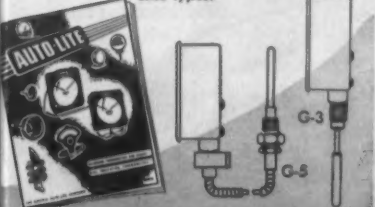
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"builder" jobs totaled 509 in 1956 and 337 in 1955.

The above figures reflect the sharp reduction in residential building in the Fort Worth area during 1957 rather than any lessened interest in air conditioning, it is believed. It may well have been that a greater percentage of new homes were air conditioned here last year than in 1956.

Cool 588 Existing Homes Last Year

Number of existing homes air conditioned in 1957, which totaled 588, was up from the 543 noted in 1956 and the 467 recorded in 1955.

This gradual but steady gain in existing home jobs has probably been helped by increasing interest of many contractors in this market.

The accompanying tables also show a breakdown between year-round systems and "cooling only" installations. There were 887 year-round systems recorded in 1957 and 550 cooling only jobs. The 1956 figures were 1,255 and 361, respectively; the 1955 installations showed 802 year-round and 377 cooling only.

Air-Cooled Jobs Lead with 1,367

Air-cooled equipment continues to dominate the residential field, the 1957 Fort Worth survey shows. There were 1,367 air-cooled jobs compared with 70 water-cooled units installed for Fort Worth homes in 1957, according to the survey.

Of the 1,367 total air-cooled

units, 1,340 were remote type systems and 27 were self-contained. Twice as many self-contained air-cooled units were installed in 1956, which saw 1,502 remote units installed in Fort Worth homes. No comparison of remote vs. self-contained air-cooled units is available for 1955.

Impact of air-cooled equipment is readily shown in one of the accompanying tables which lists 485 water-cooled residential systems in 1955, 60 in 1956, and 70 in 1957.

Fewer Cooling Towers

Installations of cooling towers has dropped correspondingly. There were 415 towers installed on Fort Worth residential systems in 1955, compared with 58 in both 1956 and 1957.

The detailed tabulation of 1957 installations provides an analysis of the sales of the 57 contractors involved. Leading contractor with 327 units reported his sales were off sharply from the 518 he claimed in 1956. He ascribes this drop to reduced building activity. His

Fort Worth Sales For 3 Years

	1955	1956	1957
Total	1,179	1,616	1,437
New homes			
Owner	381	564	396
Builder	337	509	453
Existing homes	467	543	588
Year-round	802	1,255	887
Cooling only	377	361	550
Air cooled	694	1,536	1,367
(Remote)	..	1,502	1,340
(S.C.)	..	54	27
Water cooled	485	60	70
With tower	415	58	58

new home jobs in 1957 totaled 282 (in both the "owner" and "builder" classification) compared with 466 new home installations in 1956.

Although some other contractors likewise suffered some drop in sales during 1957, a considerable number chalked up gains, some sizeable.

37 Different Makes Greatest Ever There

A check of the 1957 Fort Worth residential air conditioning installations reveals that 37 different makes were involved, 21 in 1956 and 24 in 1955.

Twelve of the makes represented in 1957 can be classi-

everything you need for everyday repairs



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One kit gives you all the equipment you need to repair, service, or install any air-conditioning or refrigeration system. Three open-flame torch stems allow you to choose the exact flame for any soldering, heating, or brazing job.

A fourth stem provides a quick and sure device for locating leaks of non-combustible refrigerant gases such as F-11, F-12, F-21, F-22, F-113, F-114, and Carrene. This detector instantly reacts to as little as 100 parts of halide refrigerant gas in a million parts of air. All stems fit interchangeably on the same cool-grip handle.

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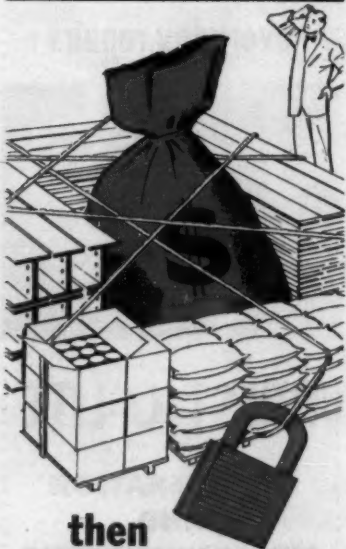
Gundlach To Head All Midwest Cooling, Refrigeration Sales

HARRISON, N. J.—R. O. Gundlach has been appointed regional sales manager of all Worthington air conditioning and refrigeration activities in the midwest region with headquarters in Chicago. He has been announced by M. M. Lawler, vice president and general manager of the Worthington Air Conditioning and Refrigeration Div.

In his new post, Gundlach will assume responsibility for all direct and distribution sales in the Chicago, Minneapolis, St. Louis, Kansas City, Denver, and Tulsa district office territories.

Prior to his present appointment, Gundlach was serving as distribution district manager of the midwest district, it was noted.

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Air Distribution Requirements In Year-Round Air Conditioning

Part 2—Fundamentals of Air Handling

By Frank D. Klein, Chief Engineer, Governair Corp.

Before proceeding further it is necessary to learn four important definitions involved in the flow of air:

VELOCITY PRESSURE. The Velocity of the flow of air in motion, reveals the Velocity Pressure which is a result of the kinetic energy in the air.

STATIC PRESSURE. Is the amount of compressive or expansive energy contained in the air and indicates its amount of potential energy. Though Static Pressure by normal concept associates itself with air in motion or at work, it can exist in air at rest; it becomes the means of inducing as well as of maintaining flow against resistance.

TOTAL PRESSURE. Total Pressure is the sum total of both Static and Velocity Pressures. It indicates the Total Energy within the air. The Static Pressure may be changed to Velocity Pressure and Velocity Pressure may be changed into Static Pressure, but neither of these exchanges may be made without a change in Total Energy.

VELOCITY HEAD. The Pressure Difference required to induce the flow of air at a given rate, is known as Velocity Head. It is usually expressed in "Inches of Water Gauge." It is the kinetic energy equivalent to the velocity.

Because the flow of air in the heating, ventilating, and cooling cycles is carried out through a distribution system of ducts primarily, it is necessary to associate these fundamentals with such duct systems.

It has been established by Bernoulli, that in an ideal duct, which is frictionless (no friction or shock losses), the Total

Pressure is at an absolute constant along the entire length, regardless of any change in cross sectional area. On the other hand the individual Static Pressures and Velocity Pressure will vary with every change in cross sectional area.

When a predetermined quantity of air flows through a duct the velocity of the air will change with every cross sectional area change; the larger the area of the cross section the lower the velocity. With the Velocity Pressure dependent on the actual velocity, this will of course account for a decrease in Velocity Pressure.

The Static Pressure in the case of the above will rise and fall in ratio to the increase or decrease in Velocity Pressure because it is always the difference between the Velocity Pressure and Total Pressure.

The physical application involving this interchange can be seen by consulting Fig. 14. In this illustration one can see that the cross sectional area increases and as it does so the Static Pressure increases and meantime Velocity Pressure decreases.

Where the cross section gets smaller the Static Pressure also decreases and the Velocity Pressure increases because of the corresponding increase in air velocity.

As illustrated no friction losses have been indicated, which never is the case in practical application.

The illustration merely points up the index of Bernoulli's Theorem.

On the other hand consult Fig. 15.

Here can be seen the application of practical air flow involving Friction Losses.

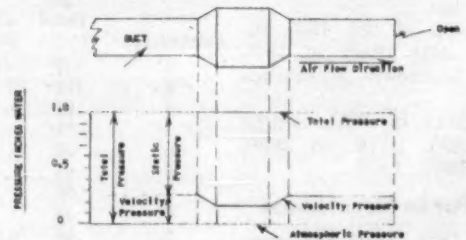


FIG. 14—Theoretical airflow without any friction loss.

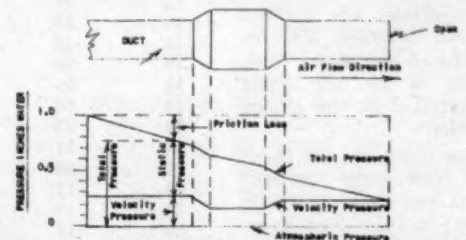


FIG. 15—Practical airflow in practical application.

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NATIONAL-U. S. RADIATOR • AMANA
GILSON • GIRTON • AND MANY OTHERS

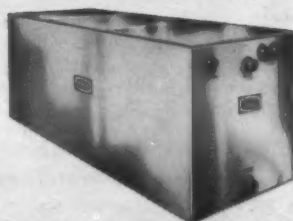


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DEPENDABLE
AIR CONDITIONING



Furnace Industry Future Told--

(Concluded from Page 1, Col. 3) agreed that more effort should have been devoted to wholesalers in preparing the report.

Pointing out that the furnace industry's average profit of 3% per sales dollar noted in a similar audit made in 1955 had now dropped to zero, Reich also predicted that profit margins of the new year-round air conditioning industry "will probably follow the narrower margins of the furnace field rather than those of the air conditioning industry."

Emphasizing the furnace industry's failure to make inroads

in the replacement market, Reich declared that two programs are needed: (1) upgrading the quality of heating installations, and (2) education of the public to understand and demand heating comfort.

The report was summarized with these six conclusions:

"1. Relying for sales on price-cutting rather than on improved quality inevitably creates a profitless situation. It has done so in this industry, where most companies compete solely on the basis of price.

"2. Slipshod distribution patterns can harm an entire in-

dustry. Most furnace manufacturers do not protect their own sales outlets. A small project builder can by-pass his local heating contractor and buy directly from the wholesaler—or he can by-pass the wholesaler and buy directly from the manufacturer. As a result, loyalty to manufacturers is low, and profits for all three levels are lowered by builder pressure.

"3. Chaotic distribution patterns also fail to protect the public. And when they do, they reflect adversely on the manufacturer. While the furnace maker, within the typical present distribution system, has no direct connection with a faulty installation—often does not know where his units are installed—each inadequate heating system damages his future sales.

"4. An industry's reluctance to establish or follow standards creates consumer suspicion that can harm all elements of the industry.

"5. Even single-product companies can protect themselves from cyclical sales by diversifying their markets. While the home building industry has been depressed for two years, the field of home improvements has prospered. Heating companies active in the replacement market have suffered far less than those dependent solely on sales to project builders.

"6. Failure to educate the consumer can lose him to inferior products. By not selling the potential comfort of modern warm air heating, the industry has lost many sales."

Far West Uses More Products--

(Concluded from Page 1, Col. 4) famed resort spots of Las Vegas and Reno probably couldn't exist without air conditioning. And it was in the Pacific Northwest, with its temperate climate, that heat pump air conditioning got much of its original impetus.

In the field of refrigeration, the famed giant supermarkets of the Far West have provided many innovations which have increased the use of refrigerated equipment in food merchandising, and many new uses for cooling in processing work have been developed in the civilian and Defense industry activity peculiar to the area.

To get down to specific examples, Cloud Wampler, chairman of the board of Carrier Corp., has been quoted:

Room air conditioner volume in California has expanded at a rate more than double that for the nation. Whereas the country-wide retail figure for the industry moved up 50% from 1954 to '56, it gained 107%.

There is a similar trend in complete residential air conditioning. For the nation, the 1956 total in residential unit sales was 226% ahead of that for 1954. For California, however, the gain was 270%.

A more recent report by the Sacramento Municipal Utility District on room air conditioners connected to its lines is to the point. Totals for the last three years were:

1957	1956	1955
3,097	2,417	2,314

Another interesting segment of this report shows that the number of evaporative type room coolers in the Sacramento area dropped slightly from a 2,553 figure in 1955 to a 2,461 total in 1957, indicating the increasing popularity of mechanically refrigerated equipment even in "super-dry" areas.

In the field of complete building air conditioning, there has been a marked advance in the past couple of years. Of the large office buildings erected in the last three years in San

Francisco (which boasts a "perfect" climate), three are completely air conditioned, and a fourth partially so. The new 22-floor Crown Zellerbach building will be air conditioned, and it is said that there are at least nine other major structures, all to be air conditioned, planned for San Francisco and Oakland.

Weather--

(Concluded from Page 1, Col. 3)

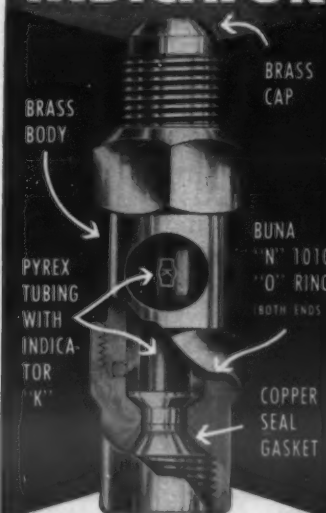
Weather Bureau. "Above normal" temperatures are predicted for the northern Atlantic seaboard and central Plains states, and most of rest of California.

Slightly below normal temperatures are predicted for Texas and parts of the southwest, and the southeastern Atlantic coastal region.

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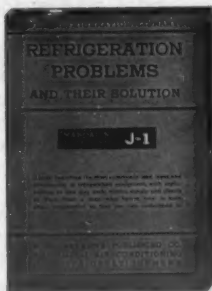
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More Western Show Exhibitors

(Too late to include with the Western Show booth stories on pages 6 and 8 of this issue are these four exhibitors.)

New air-water cooled condensers will highlight the Dunham-Bush, Inc. display in booths 216, 218, and 220. With its subsidiaries Heat-X, Inc., Brunner Div., and the Brunner Co., the company will exhibit air conditioning coils, multizone units, chillers, condensing units, compressors, and condensers.

In booth 414, Air Cold Sales, Inc. will exhibit Bendix-Westinghouse compressors, Bohn Aluminum & Brass Co. cooling coils, and York window air conditioners.

"Expandable" filters, called a new concept in filters, will be a feature attraction at Air Conditioning Supply Co.'s booth 204. Representing Flanders Filters, Inc., New York Blower Co., Little Giant Pump Co., and Loren Cook Co., Inc. the firm will also display other items.

Key models of natural gas air conditioning equipment by Arkla-Servel and Ready Power, and a library of explanatory pamphlets will dramatize the Natural Gas Bureau exhibit in booth 502.

MARSH Instruments

THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.

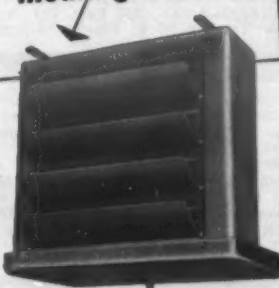
PRESSURE GAUGES and Dial Thermometers for all services.

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LARKIN HUMI-TEMP UNIT

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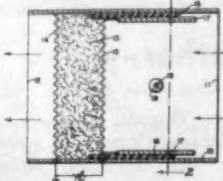
Manufacturers of the original Cross-Fin Coil • Humi-Temp Units • Frost-O-Trol Hot Gas Defroster • Air Cooled and Evaporative Condensers • Cooling Towers • Air Conditioning Units and Coils • Direct Expansion Water Coolers • Heat Exchangers

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PATENTS

Week of Feb. 4
(Continued)

2,822,058. **ELECTROSTATIC PRECIPITATORS.** William J. Roos, Sharon, and Earl L. Richardson, Hyde Park, Mass., assignors to Westinghouse Electric Corp., East Pittsburgh.

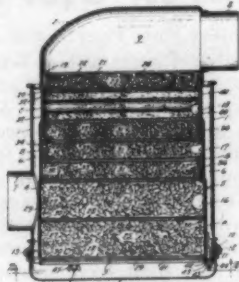


2. An electrostatic precipitator comprising a metal casing having an open air inlet and an open air outlet, a mat of dielectric filaments extending crosswise said casing between said inlet and outlet, a metal screen between said mat and said outlet in contact with said casing, a second metal screen between said mat and said inlet, said second screen being insulated from said casing.

2,822,059. **AIR CLEANER.** Robert J. Lunn and Frank A. Donaldson, Jr., St. Paul, Minn., assignors to Donaldson Co., Inc., St. Paul, Minn.

In an air cleaner, casing structure comprising cooperating casing sections defining an air inlet and an air outlet, a tubular supporting sleeve within said casing structure defining a chamber communicating with said inlet and outlet, said sleeve having a plurality

of cylindrical surfaces of progressively greater diameter from one end of



the chamber toward the other end thereof, a filter structure removably mounted in said chamber between the inlet and outlet.

2,822,110. **JOINT.** Daniel D. Wile, Whittier, Calif., assignor to Refrigeration Engineering, Inc., Los Angeles.



1. In a housing having panel walls and adapted to contain fluid under pressure, a moisture-proof joint, comprising: a rigid, elongated, outwardly facing, channel-shaped frame member including outwardly extending flanges along the opposite sides thereof, each flange of said frame member being overlapped by the respective edge portion of the adjacent panel with the free edges of said flanges abutting the inner faces of said panels adjacent to the respective edge portions thereof and along substantially the entire extent thereof.

(To Be Continued)

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Chrysler auto air conditioner is the sixteenth make to be discussed in this series. Makes previously described were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, Novi, Vornado, Polar-Temp, American Motors, Buick, Cadillac, and Chevrolet.

CHRYSLER (4)

The following summarizes the test procedure recommended by Chrysler not only as the initial test following installation but for diagnosing complaints.

Test Procedure

1. Install gauge manifold set.
2. Set temperature control lever to "Off" and selector switch to "Cooling."
3. Start engine and adjust to 1,200 r.p.m.

A. Clutch should be de-energized.

B. Fresh air door should be closed and recirculation door open.

(If clutch is energized and solenoid valve circuit is open, black wire on right micro-switch of main control and white wire on left switch are connected to wrong terminals of switches.)

(Use 12-volt test lamp (Fig. 8) to check solenoid valve circuit. Don't allow valve hot wire to ground as this will burn out right micro-switch.)

(Check hydraulic circuit for proper connections at solenoid valve.)

(Check power piston and linkage.)

C. Check water valve "fooler" circuit with test light. Circuit should be open and test light out.

D. Check water valve lever. Valve should be closed with lever against its stop towards spring and spring loose.

4. Open instrument panel air discharge grille doors fully to direct air up and toward rear of car.

5. Adjust defroster control to direct all air up through outlet grilles.

6. Check blower operation at all three speeds and leave on "high" position.

7. Move temperature control lever to "Cold."

A. Clutch should be energized.

B. Fresh air door should be closed and recirculating air door should be open.

C. Water valve "fooler" circuit should be energized but test light should be dim.

D. Water valve lever should still be closed with no hot water flowing through valve.

8. Move main temperature control lever about $\frac{3}{4}$ in. to right (down on Imperial models) of "Cold" to actuate left micro-

switch but not enough to move water valve lever.

A. Fresh air door should be open and recirculated air door closed.

B. Hot water valve should be closed.

C. Water valve "fooler" circuit should be energized but test light will be dim.

D. Clutch should be energized.

E. Sight glass should be free of bubbles after clutch has been engaged for about five minutes.

9. Recheck engine speed and adjust to 1,200 r.p.m. if necessary.

10. Arrange gauge manifold hoses and tachometer wires to front of grille so that hood may be closed but not locked.

11. Close hood to prevent hot air from engine compartment entering cowl vent opening.

12. Move temperature control lever back to "cold" position.

(Fresh air door should close and recirculation door open. This requires about 45 seconds on early 1957 production units, 10 seconds on later production units.)

13. Turn blower switch to "Low" and keep car windows and doors closed.

14. Observe suction pressure.

Suction pressure should fall gradually and fluctuate between 20 and 10 p.s.i.g. at which point the thermostat should open contacts and de-energize clutch.

When clutch de-energizes there will be a slight increase in engine speed and a sharp, steady rise in suction pressure. As evaporator warms up, thermostat will energize clutch again.

(If suction pressure falls below 10 p.s.i.g. before clutch is de-energized, bulb of thermostat is not making good contact with evaporator.)

(If suction pressure pulls down into a vacuum without the clutch being de-energized, it indicates: (1) thermostat wires are shorted together, or (2) thermostat is defective, or (3) there is moisture in system freezing at expansion valve.)

From this point the serviceman can proceed to the following over-all performance test procedure.

Performance Test

Maximum discharge air temperatures for the 1957 Chrysler conditioner are listed in the accompanying chart. This shows the maximum temperatures that should be delivered at the right hand discharge outlet on the instrument panel for various combinations of dry bulb and wet bulb temperatures of the air entering the cowl intake.

To make this performance test the main control lever should be moved about $\frac{3}{4}$ in. to the right (down on Imperial cars) of the "Cold" position so

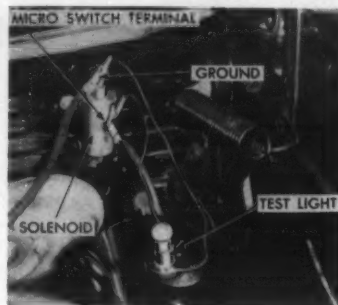


FIG. 8—Using 12-volt test lamp to check solenoid valve circuit.

1957 Chrysler Maximum Discharge Air (°F.)

Inlet Dry Bulb Temp. (°F.)	70	40	42	45	49	...	...
75	42	45	47	49	54	...	...
80	45	46	47	49	54	59	...
85	46	47	49	50	54	59	...
90	48	48	49	50	54	59	...
95	51	51	52	53	55	59	...
100	53	53	53	53	55	59	...
Inlet Wet Bulb Temp. (°F.)	52	55	60	65	70	75	...

that hot water valve is still closed.

Blower switch is turned to "High."

Hood, doors, and windows must be closed.

Operate engine at 1,200 r.p.m. for several minutes to build up operating temperatures and pressures.

For this test the discharge pressure should be maintained between 190 and 210 p.s.i.g. Under some conditions it may be necessary to restrict air flow across the condenser with cardboard, paper, etc., to raise the discharge pressure to the required 190-210 p.s.i.g.

Bulb of the thermometer used to check inlet temperatures must not be allowed to touch metal. A small piece of wood, such as a pencil, can be used to support the bulbs.

If discharge air temperatures exceed those shown in the accompanying chart, heat from the engine compartment is probably penetrating the cooling system through air leaks and/or insulation.

FTC Charges Admiral With Price Favoritism

WASHINGTON, D. C.—Admiral Corp. was charged by the Federal Trade Commission with unlawfully favoring some customers with lower prices and more generous advertising payments over their competitors.

A two-count Commission complaint alleges that Admiral:

Discriminates in the prices charged its retail customers (radio, television and appliance stores, and furniture, chain and department stores), in violation of Sec. 2(a) of the Robinson-Patman Amendment to the Clayton Act; and

Does not make promotional allowances available to all retailers on proportionally equal terms, in violation of Sec. 2(d) of the law.

A hearing is scheduled June 2 in Chicago.

Tenney Names Schiffman

UNION, N. J.—Tenney Engineering, Inc. has named Saul S. Schiffman as chairman of its board of directors. He will also continue as secretary-treasurer and chief financial officer of the company.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications \$10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

SENIOR PROJECT or chief engineer—An aggressive self-starter, full of initiative & enthusiasm for broader engineering or manufacturing responsibilities. Seventeen years' experience handling engineering & manufacturing problems. 5 years of which have been design & product engineering of refrigeration & air conditioning systems, especially heat pumps. BOX A6008, Air Conditioning & Refrigeration News.

EXECUTIVE ENGINEER—20 years of diversified experience in financial, sales, engineering, and production in the metal and plastics industries—Domestic and commercial refrigeration. BOX A6012, Air Conditioning & Refrigeration News.

AVAILABLE MANUFACTURERS representative for Memphis Tennessee & Tri-State area. Commercial and residential air conditioning & heating, also panel heating—Allied lines—Good following. BOX A6015, Air Conditioning & Refrigeration News.

GRADUATE ENGINEER. Ten years' experience in factory and field as sales representative and service manager on Frigidaire and allied products. Overseas experience. Speak three languages. Available immediately. BOX A6016, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

SALES ENGINEER wanted at home office for air conditioning and refrigeration application engineering, principally in O.E.M. field. Graduate engineer with previous experience preferred. Send resume and salary requirements to BOHN ALUMINUM & BRASS CORPORATION, Bets Division, 1625 East Voorhees Street, Danville, Illinois. Attention: sales manager. Replies will be held in confidence.

TEST ENGINEER—Leading air conditioning manufacturer has opening for man with experience in air conditioning laboratory testing. Design knowledge helpful but not required. Good salary, paid group insurance and other benefits. All replies confidential. Send resume to Mr. Williams, PEERLESS CORPORATION, 1853 Ludlow Ave., Indianapolis 7, Indiana.

EXCLUSIVE DISTRIBUTOR—We offer an exclusive distributorship for well established patented frankfurter machines, hamburger machines and roll warmers being successfully sold to leading chain stores, soft ice cream

stores, theatres, drive-ins, meat packers, sport arenas, amusement parks, etc., at a good profit. Financial requirements, depending on territory desired is secured by inventory of proven merchandise. Give business history, address and phone number. ROLL-AGRILL CORP. OF AMERICA, 457 West 40th Street, New York 18, N. Y.

MANUFACTURER'S REPRESENTATIVE for well known line of refrigeration and air conditioning compressors, condensing units to 5-75 tons, package liquid chillers up to 300 tons, and cooling towers 5 to 60 tons. Knowledge of air conditioning necessary—a number of important territories are now available. No objection to heating or other compatible lines. Write fully. BOX A6017, Air Conditioning & Refrigeration News.

TRAVELING SALESMAN wanted for contacting architects, school boards, and kitchen equipment dealers to represent established manufacturer of reach-in refrigerators. Position requires full time field work. Please give resume of background. BOX A6018, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WANTED: MANUFACTURERS surplus, outdated or obsolete refrigeration items—expansion & water & shutoff valves, controls, relays, dehydrators, units, tubing fittings, etc. All sales on a cash close-out basis, large or small quantity. Write or call: COMMERCIAL CONTROLS CO., 267 East 3rd Street, New York 9, N. Y. ORegon 3-7210.

EQUIPMENT FOR SALE

A REAL buy in auto air conditioning—6 complete under-dash units, wholesale value \$1200. Plus miscellaneous parts (compressors, condensers, coils, valves, brackets, hoses, motors, etc.) wholesale value approximately \$6000. All late, usable inventory. First \$2500 takes everything. HYDRO SALES & SERVICE, 1132 Montrose, Chicago, LO 1-1222.

FOR SALE: Silica Gel dehumidifiers 4 units, Model 29R. Good condition. Rated for nominal absorption. Air capacity rating 2900 C.F.M. Write, call POLYCHROME CORPORATION, Yonkers, New York. Mr. Hosney, Yonkers 5-8800.

WELL KNOWN brand condensing units: Open type (New) $\frac{3}{4}$ HP air cooled—less motor \$55.00. 1 $\frac{1}{2}$ HP air cooled—less motor \$144.00. 3 HP water cooled—less motor \$175.00. FOB Chicago, Illinois. Send for bulletins and catalog on money saving refrigeration values: WALTER W. STARR, 2833 Lincoln Ave., Chicago 18, Illinois.

200 3 H.P. Name brand compressors F23 brand-new, late model, 230V single phase, complete electrical accessories \$75.00 each. 200 3 H.P. Power Packs goes with above—\$12.00 each. Manufacturers inventory. BOX A6019, Air Conditioning & Refrigeration News.

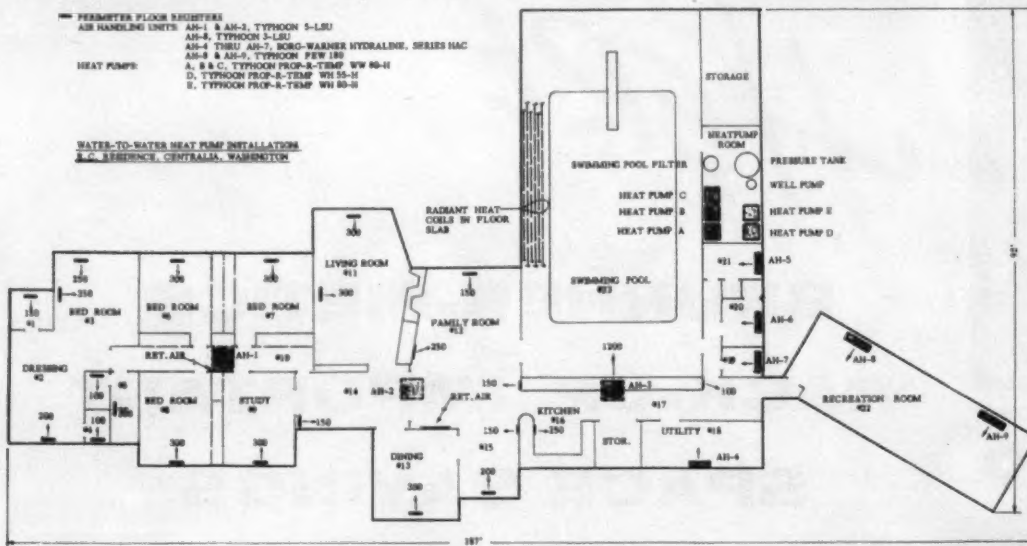
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INSTALLING AIR CONDITIONER ICE CUBE BIN DRINKING FOUNTAINS BUY THE BEST **KESCO** AUTOMATIC CONDENSATE WATER DISPOSAL PUMPS 1/30 H.P. to 1/3 H.P. 10 ft. to 50 ft. Head At Your Wholesaler

In Sprawling Northwest Home

Four Heat Pumps Control Temperature — One Heats Water for Indoor Swimming Pool



CENTRALIA, Wash. — In what is claimed to be the largest residential heat pump installation in the world, five Typhoon "Prop-R-Temp" heat pumps are not only controlling the temperature in a sprawling 6,400 sq. ft. home here, but one heats the water for an indoor swimming pool.

Four 5-ton and one 3-ton water-to-water heat pumps use 52° F. well water as the heat source. Because of the relatively mild winters, no electric resistance heaters are needed for supplementary heat.

3 HEAT, COOL HOME

Three of the 5-ton units are used for heating and cooling the residence, according to Roland Pillat of the DePartee Co., Seattle, which made the installation in March, 1957. They supply 120° F. water on the heating cycle and 55° F. water on the cooling cycle.

The other two units are not reversible. The 5-ton heat pump heats the water in the swimming pool, keeping it between 72° and 82° F.

The 3-ton heat pump supplies hot water to a radiant heating system placed in the tile floor and in the walls surrounding the swimming pool to keep room and floor temperatures above that of the water.

Taking advantage of the low cost of electric power in the Pacific Northwest, the heat pumps are very competitive with other available heating fuels in their operation, Pillat said.

HOME WELL INSULATED

The single floor residence, though spread over an area 187 by 92 ft., is unusually well constructed and insulated. With the exception of those in the bedroom wing, rooms are equipped with Thermopane windows.

The standard stud wall construction is finished on the inside with 2 in. of plaster. The outside of the residence is covered by insulating board equal to 1½ in. insulation, a 1-in. air space, and face brick.

The ceiling, under ventilated attic space, carries 6 in. of insulation, except in the recreation room and swimming pool area, where open beam construction

has been used in the home.

In these last mentioned areas, 2-in. insulation has been placed between the finished ceiling and the shake roof. The floor, over enclosed crawl space, is plywood throughout, covered by wall-to-wall carpeting, slate, or quarry tile.

The total heat loss, based on 15° F. outdoor design temperature, is estimated at 234,000 B.t.u. for a total of 6,393 sq. ft. of enclosed floor area (see table).

In designing the heat pump system for this particular residence, five individual heat pump units were selected rather than one larger unit of the same heating and cooling capacity.

The water-to-water system with remote air handling units was preferred over the direct water-to-air system because of its greater flexibility and simplicity of control.

DIVIDED INTO 4 ZONES

Anticipating varying internal load conditions, the residence was divided into four zones (see floor plan):

Zone 1: Bedroom Wing (Rooms 1 through 10).

Zone 2: Living and Kitchen Area (Rooms 11 through 17).

Zone 3: Recreation Room and Utility Area (Rooms 18 through 22).

Zone 4: Swimming Pool Area (Room 23).

Zones 1, 2, and 3 are each served by a 5-ton heat pump, model #WW-80H, and are shown on the floor plan as Units A, B, and C. Zone 4 uses a 3-ton heat pump, model #WH-55H, and is designated on the floor plan as Unit D. The water in the swimming pool is heated by a 5-ton Typhoon Prop-R-Temp heat pump, model #WH-80H, and is designated as Unit E.

All heat pumps are located in the heat pump room which also contains a 5-hp. well pump, a 250-gal. pressure tank, and the swimming pool filter system.

Heat pumps A and B supply, through 1½-in. insulated copper tubing, hot or chilled water to Typhoon 5-LSU air handling units (AH-1 and AH-2) located in the enclosed crawl space under the floor of zones 1 and 2.

Conditioned air is distributed through an insulated duct sys-

ABOVE: Schematic drawing of sprawling Centralia, Wash. home showing c.f.m. rate for each register in the zoned areas.

RIGHT: Heat pump room in the R. C. residence showing three of the five "Prop-R-Temp" heat pumps, from back to front unit a, b, and c, model WN-80 (5 ton).

tem to each room and discharged by means of perimeter floor registers. Cold air is returned to the air handling units through centrally located grilles.

Both zones 1 and 2 are controlled by heating-cooling thermostats.

In order to avoid a rush of cold air entering the rooms during the winter operation, an aquastat was placed in the circulating water line, starting the fan motor on the air handling units as soon as the water temperature reaches 110° F. This aquastat is by-passed on the cooling cycle.

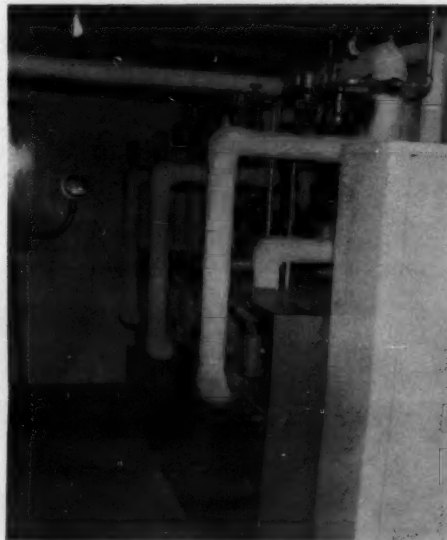
AQUASTAT CONTROL

Heat pump C supplies conditioned water to several air handling units located in utility and shower rooms and the recreation room. Rooms 18 through 21 are heated and air conditioned by Borg-Warner Hydraline, series HAC, recessed air handling units, and controlled manually by a 10-speed switch (AH-No. 4 through 7).

The recreation room #22 is conditioned by two Typhoon FEW-180 console enclosed air handling units, controlled by a three-speed manual switch.

Heat pump C also supplies hot or chilled water to a Typhoon 3-LSU air handling unit (AH-3), which is located in the attic space above the kitchen area, discharging tempered fresh air into the swimming pool room. This unit is controlled by

Heat Loss Estimate									
Win-Heat Loss In B.t.u.				Heat Loss In B.t.u.					
Rm. No.	dow Area	Wall Area	Floor Area	Window	Wall	Ceiling	Floor	Infil-tration	Total
1	6	106	49	408	636	147	686	392	2,259
2	12	188	156	816	4,892	468	2,184	1,248	9,612
3	39	117	229	2,652	702	687	3,208	1,832	9,081
4	12	28	30	816	168	90	420	240	1,734
5	12	28	70	816	168	210	980	560	2,734
6	24	88	168	1,632	528	504	2,352	1,344	6,560
7	24	88	168	1,632	528	504	2,352	1,344	6,560
8	24	96	168	1,632	576	504	2,352	1,344	6,408
9	24	120	168	1,632	720	504	2,352	1,344	6,552
10	...	...	144	...	...	432	2,016	1,152	3,600
Sub-Total No. 1									54,700
11	156	92	390	4,680	552	1,170	5,460	3,120	14,982
12	84	44	480	2,520	264	1,440	6,720	3,840	14,784
13	50	270	224	1,500	1,620	672	3,136	1,792	8,720
14	64	...	154	4,352	...	462	2,156	1,232	8,202
15	52	76	126	1,560	456	378	1,008	1,764	5,166
16	18	94	204	540	564	612	2,856	1,632	6,204
17	...	...	187	...	...	561	2,618	1,496	4,675
Sub-Total No. 2									62,733
18	24	200	160	1,632	1,200	480	2,240	1,280	6,832
19	10	30	30	300	180	240	120	240	1,080
20	10	54	48	300	324	384	192	384	1,584
21	10	62	90	300	372	720	360	720	2,472
22	72	824	615	2,160	4,944	4,920	2,460	4,920	19,404
Sub-Total No. 3									31,372
23	210	382	1,891	6,300	2,292	56,730	4,000	15,128	84,450
Misc. Unheated Floor Area									444
Total									233,255



pump system working at 90% efficiency, it is estimated that this Centralia residence can be heated for \$622 per year, not including the water of the swimming pool.

The kw. rate quoted by the Lewis County Public Utility District is \$0.01. In comparison, it would cost \$2,280 with electric resistance heat at 100% efficiency, or \$1,245 with fuel oil at 17¢/gal., working at a 75% efficiency to heat the same residence.

The estimated cost of operation for heat pumps A, B, and C on the air conditioning cycle during the summer (including dehumidification of the swimming pool area) is \$87. The annual cost of maintaining the water of the indoor swimming pool at the desired temperature is \$62.

Ike Wire Lauds PHC Effort

CHICAGO — President Eisenhower has sent a telegram to W. A. Landers, president of the Plumbing-Heating-Cooling Information Bureau, congratulating the industry on its "efforts to improve the mechanical facilities in housing units."

The White House telegram reached Landers just prior to the industry nationwide promotion of May as Plumbing-Heating-Cooling Month. During May plumbing and heating contractors across the nation, as well as wholesalers and manufacturers, will be encouraging homeowners to undertake these home improvements.

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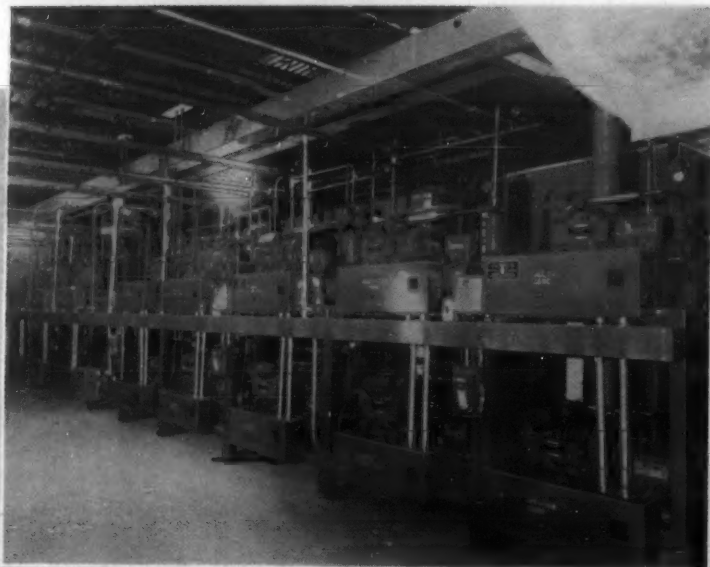
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